June 4, 1956

Dealing with Tomorrow's Problems Today . . . p. 38

RAILWAY AGE

WORKBOOK OF THE RAILWAYS

THE INDUSTRY'S ONLY WEEKLY NEWSMAGAZINE

11 New General Motors GP9 Units for the Southern Railway

Continuing the advances made since 1940 when the Southern Railway put its first General Motors Diesel locomotive to work, this progressive road last year added 11 GP9's to its fleet to handle increased freight business. More than 3300 of these versatile general-purpose units now in service in the United States and Canada have proved themselves the most productive investment any railroad can make.

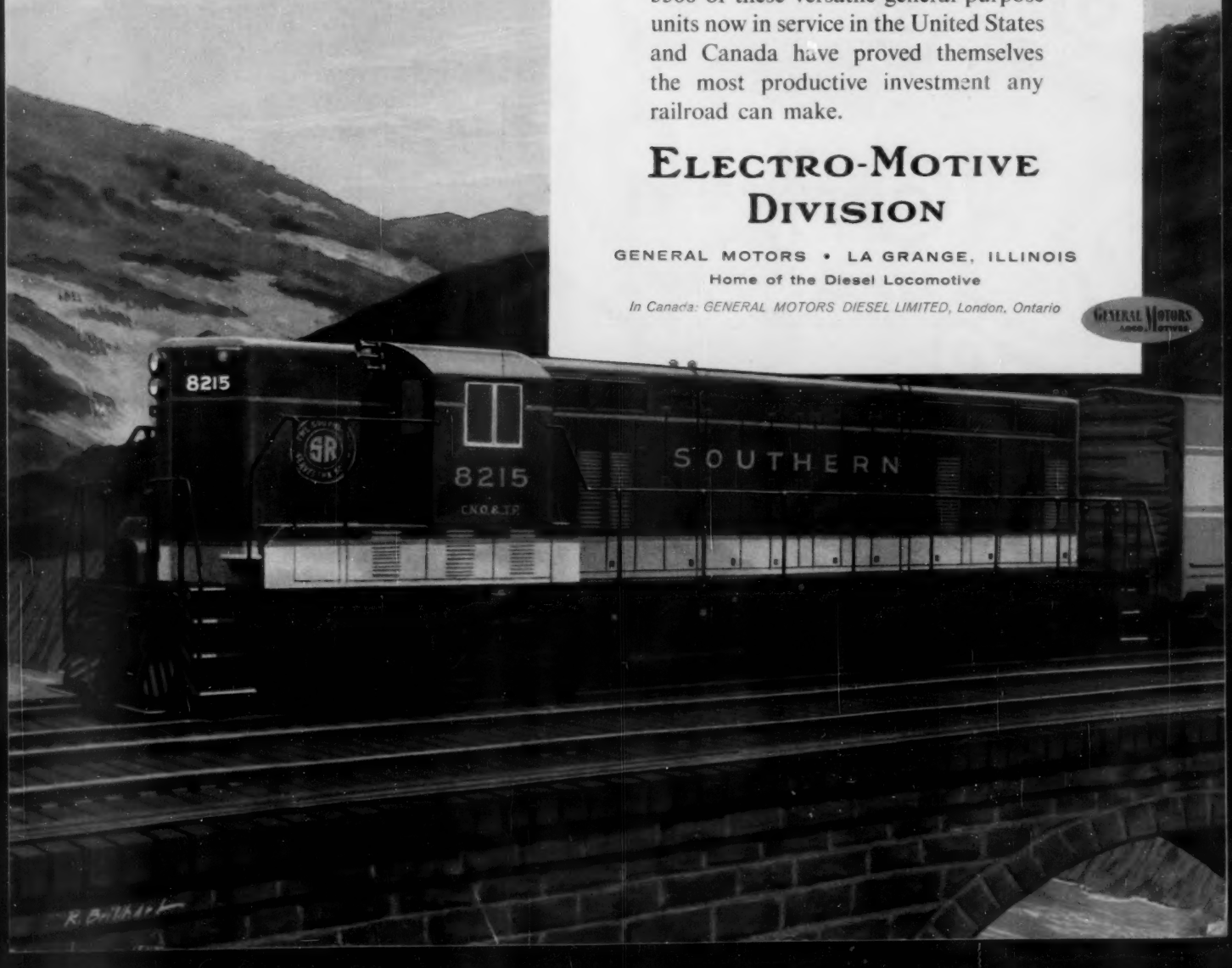
ELECTRO-MOTIVE DIVISION

GENERAL MOTORS • LA GRANGE, ILLINOIS

Home of the Diesel Locomotive

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

GENERAL MOTORS LOCOMOTIVES



WORKING TOGETHER *for a* COMMON GOAL!

There are many incentives which spur America's business, and its employees, to the ever-increasing heights of inventiveness and productivity enjoyed in this nation today.

Profit, prestige, satisfaction with a job well done, desire to improve standards of living, creativeness — all play a vital role in every business organization.

They have been, and will continue to be, part of the motivating force behind the tremendous strides made in the past decade at Kershaw Manufacturing Company.

But there's one other ingredient at Kershaw, and we think it is the most important, by far.

Kershaw Manufacturing Company is dedicated to the pleasant task of helping America's railroads solve whatever trackwork problems they might have and thereby attain even higher standards of successful operation.

At Kershaw, we are truly working with the railroads for a common goal.

KERSHAW
MANUFACTURING CO. INC.
MONTGOMERY K ALABAMA

TRACKWORK EQUIPMENT DEVELOPED AND PROVEN ON THE JOB

KERSHAW BALLAST REGULATOR, SCARIFIER AND PLOW — KERSHAW KRIBBER — MOCAR CRANE — UTILITY DERRICK TWO-TON RAIL DERRICK — CRIB ADZER — STANDARD JACK-ALL — TRACK CRANE—TIE REPLACER—TIE BED CLEANER TRACK BROOM — UNIVERSAL SET-OFF ASSEMBLY — BALLAST UNDER CUTTER-SKELETONIZER — BALLAST CLEANER AND DISTRIBUTOR — ROTARY TRACK MOWER — SPOT-TAMPER — TIE SPACER

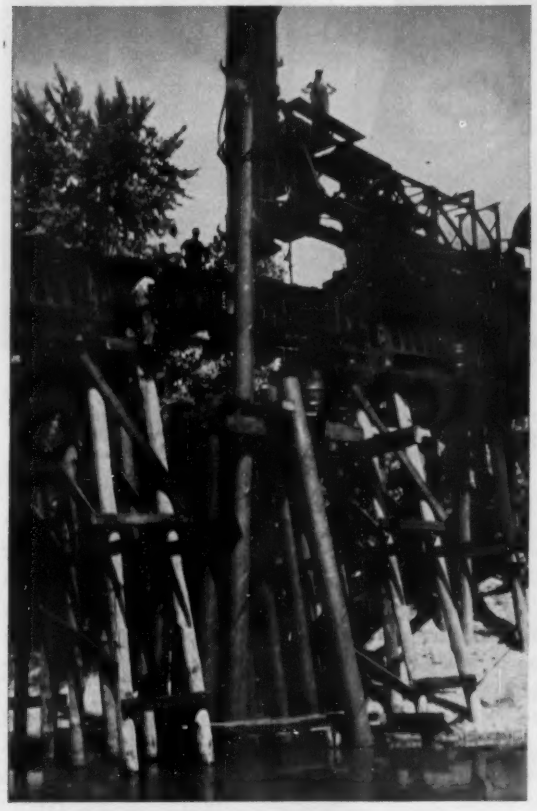
Fast, Economical Trestle Construction with Armco Steel Pipe Piling

Steel Pile Trestle Construction

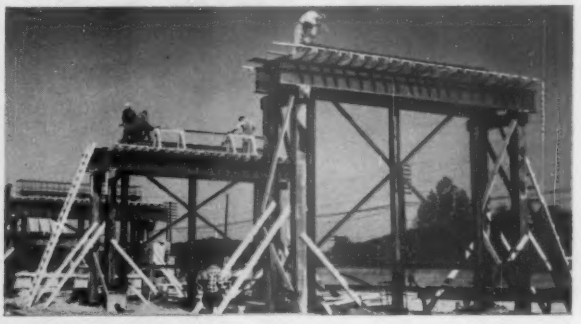
SAVES TIME
SAVES FORMWORK
SAVES MATERIALS

The three structures illustrate some of the advantages of trestle construction with Armco Steel Pipe Piling. See how the Armco Piling helped solve both engineering and construction problems.

On-track equipment drives Armco Piling to replace an obsolete structure near Golden Gate, Illinois. There was no need to divert the stream or de-water the site. Cast-in-place Armco Pipe Piles stay water-tight under the impact of driving. Water is no problem.



Formwork is held to a minimum, time and materials saved. Here forms are being placed on pile bents for viaduct over new yard in Chattanooga, Tennessee.



Armco Pipe Piles have gained wide acceptance for trestle construction. This is the retarder bridge for a new yard in Houston, Texas. The foundation presents a minimum resistance to stream flow, has few structural members to pile up debris. And the wide range of diameters and wall thicknesses makes it easy to specify your exact needs.

Write us for complete data. Armco Drainage & Metal Products, Inc., 4086 Curtis Street, Middletown, Ohio. Welded Pipe Sales Division. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO®

ARMCO PIPE PILING

Why not C.T.C.

for multiple track?

In multiple-track territory with UNION C.T.C. and reverse running on all tracks, track maintenance is speeded since repairs on one track can be handled efficiently with little or no interference to movement of trains on the other tracks.

Centralized Traffic Control has proved highly successful on single- and double-track lines, and more and more railroads are applying it to multiple-track operations where it promises even greater benefits.

For example, 3 tracks, all signaled for train operation in either direction and with centralized control of all interlockings, will have a capacity equal to or greater than 4 tracks where point to point interlocking control is used and each pair of tracks is signaled for train operation in one direction only.

You gain the advantage of extremely flexible operation when one track is blocked or out of service due to an emergency or to maintenance work. What's more, you completely eliminate the expense of 2 crossovers at each interlocking as well as the cost of maintaining a fourth track, and can use the rails and track materials in other locations.

Similarly, in 2-track territory, a layout with 2 crossovers at each interlocking, and with reverse running on both tracks, will have a much greater capacity than double-track territory with passing sidings and the tracks signaled for single direction running.

Union Switch & Signal is prepared to help you analyze your traffic control problems through a competent staff of traffic control engineers. Write or call our nearest office for complete information.

75 Years 1881 1956

OF EQUIPMENT AND SYSTEMS ENGINEERING .....

UNION SWITCH & SIGNAL

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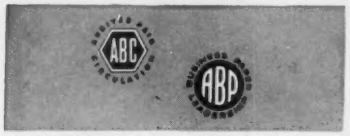
Published weekly by the Simmons-Boardman Publishing Corporation at Orange, Conn., and entered as second class matter at Orange, Conn. James G. Lyne, president. Arthur J. McGinnis, executive vice-president and treasurer. J. S. Crane, vice-president and secretary.



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AIR COSTS MONEY!

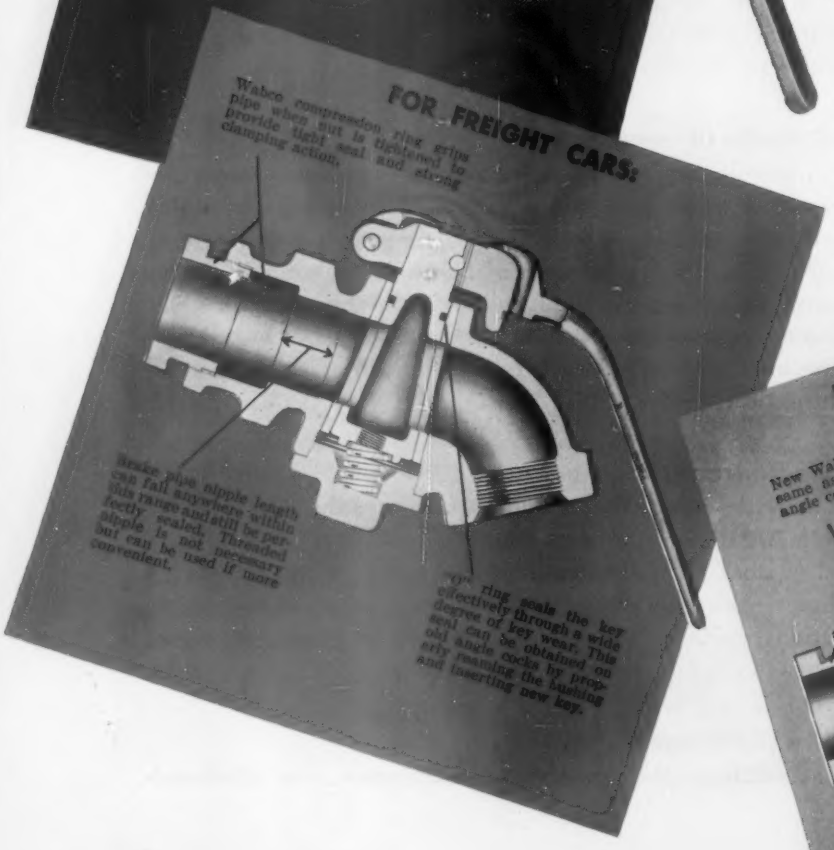
Stop leakage with new WABCOSEAL® Angle Cocks

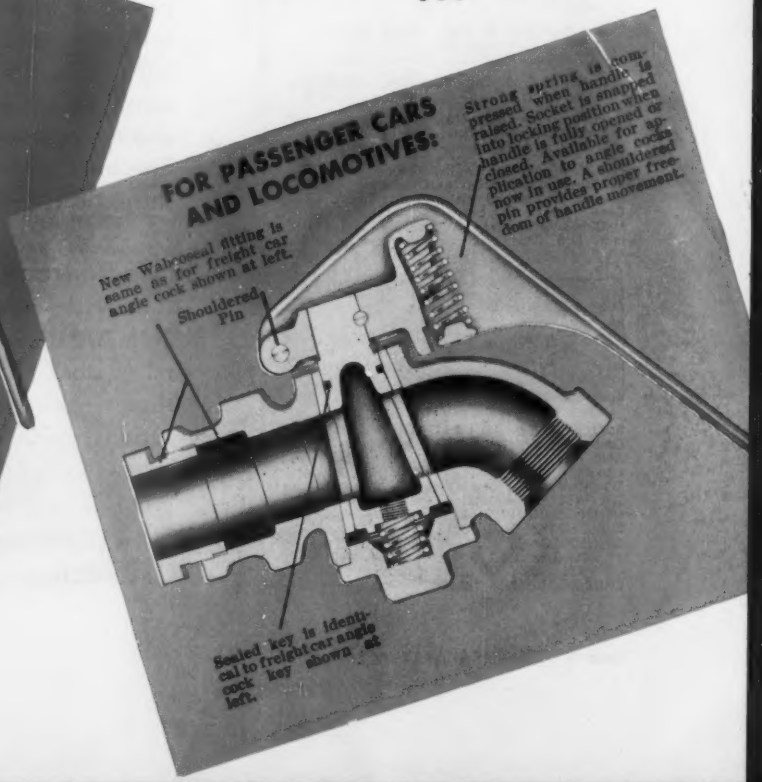
BRAKE pipe leakage increases compressor operation, lowers its efficiency and causes difficult train handling. Reduce leakage to the minimum by installing the *new* Wabcoseal Angle Cock shown here. Two styles are available—with or without spring-locking handle.

Heart of the new Wabcoseal Angle Cocks is the sealed key that stays tight through a wide degree of key wear. A Wabco compression ring replaces the standard tapped thread at the brake pipe end to give a positive seal. Also, adequate end tolerance is provided so brake pipe nipple need not be cut to precise length.

The passenger car and locomotive angle cock has a spring loaded handle that snaps the socket into locked position when handle is fully open or closed and keeps it there despite vibration and shock.

The sealed key and spring locking handle are available separately for application to present angle cocks.


FOR FREIGHT CARS:
Wabco compression ring grips pipe when nut is tightened to provide tight seal and strong clamping action.
Brake pipe nipple length can fall anywhere within this range and still be perfectly sealed. Threaded nipple is not necessary but can be used if more convenient.
"O" ring seals the key effectively through a wide degree of key wear. This seal can be obtained on old angle cocks by properly reaming the bushing and inserting new key.


FOR PASSENGER CARS AND LOCOMOTIVES:
New Wabcoseal fitting is same as for freight car angle cock shown at left.
Shouldered Pin
Strong spring is compressed when handle is raised. Socket is snapped into locking position when handle is fully opened or closed. Available for application to angle cocks now in use. A shouldered pin provides proper freedom of handle movement.
Sealed key is identical to freight car angle cock key shown at left.

Westinghouse Air Brake
COMPANY
AIR BRAKE DIVISION WILMERDING, PA.

Current Statistics

Operating revenues, three months	
1956	$2,535,561,742
1955	2,307,923,152
Operating expenses three months	
1956	$1,980,694,846
1955	1,767,777,513
Taxes, three months	
1956	$269,326,709
1955	242,996,101
Net railway operating income, three months	
1956	$218,900,246
1955	235,067,723
Net income, estimated, three months	
1956	$163,000,000
1955	176,000,000
Average price 20 railroad stocks	
May 29, 1956	101.73
May 31, 1955	96.58
Carloadings revenue freight	
Twenty weeks, 1956	14,276,647
Twenty weeks, 1955	13,332,991
Average daily freight car surplus	
Wk. ended May 19, 1956	6,894
Wk. ended May 21, 1955	14,131
Average daily freight car shortage	
Wk. ended May 19, 1956	6,679
Wk. ended May 21, 1955	6,552
Freight cars on order	
May 1, 1956	137,436
May 1, 1955	17,930
Freight cars delivered	
Four months, 1956	20,972
Four months, 1955	10,013
Average number of railroad employees	
Mid-April 1956	1,048,111
Mid-April 1955	1,011,753

RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PUBLICATIONS (A.B.P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.) AND IS INDEXED BY THE INDUSTRIAL ARTS INDEX, THE ENGINEERING INDEX SERVICE AND THE PUBLIC AFFAIRS INFORMATION SERVICE. RAILWAY AGE, ESTABLISHED IN 1856, INCORPORATES THE RAILWAY REVIEW, THE RAILROAD GAZETTE, AND THE RAILWAY AGE GAZETTE. NAME REGISTERED IN U. S. PATENT OFFICE AND TRADE MARK OFFICE IN CANADA.

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Week at a Glance CONTINUED

axle arrangements and new brakes, require, in some cases, new track circuits and appliances, as well as new operating practices, to insure completely safe functioning of protective signals. Union Switch & Signal's George W. Baughman shows that the challenge has been met. . . . p.44

After 45 years . . .

. . . the North Western station in Chicago got a "spring cleaning." The engineers had to do some neat scaffold building to get at the high arched ceiling without interfering with the use of the waiting room and concourse. . . . p.47

BRIEFS

February's capital expenditures . . .

. . . of the Class I roads totaled $97 million, up 71.9% from February 1955's $56.5 million. Outlays for equipment, at $71 million, were up 79.4%, and expenditures for road, at $26 million, were up 54.1%. The two-months total for road and equipment was $216 million, up 44% from the $150 million reported for 1955's first two months.

Atlantic Coast Line will move . . .

. . . its headquarters to Jacksonville, Fla., from Wilmington, N.C. C. McD. Davis, ACL president, told Railway Age last week that the move, which awaits construction of an office building, probably will be made in the latter part of 1957.

Relationship of heart disease . . .

. . . to employment involving above average nervous tension and responsibility is being studied by University of Minnesota medical scientists. Subjects are 150 train dispatchers from 12 railroads, who have volunteered to be "human guinea pigs" for the research project.

Regular New York-Florida commuter service . . .

. . . within the next decade was prophesied by J. C. Brawner, National Airlines officer, in a recent address to the New York Society of Security Analysts. "By 1960," he said, "it will be possible for an air traveler to board a National DC-8 at New York's Idlewild Airport and arrive in Miami in slightly more than two hours."

ATLANTIC COAST LINE FINDS ANOTHER MONEY-SAVING USE FOR THE NO. 12

In Columbia, S. C., Atlantic Coast Line Railroad is building a 100-acre industrial development. Workhorse on the project is the CAT* No. 12 Motor Grader. The big yellow unit is shown sloping building foundation. It also handles all the fine grading for streets, tracks, subgrades and general landscaping.

Tomorrow this rugged, versatile off-track machine may have a far different job. It may be shaping embankment, eliminating irregular fills, controlling weeds and brush, policing the yard, taking up track, or pulling ties.

And now this dependable off-track unit does all of these many jobs even better. For the new No. 12 packs more power, 115 HP, and has faster reverse speeds. Its exclusive Caterpillar oil clutch will give you more economy and efficiency than ever. The new clutch increases work life since a constant oil bath lubrication reduces wear on all moving parts. Maintenance is greatly reduced and no external lubrication is required.

New tubeless tires are available on the No. 12 *at no extra cost*. These new tires eliminate an estimated 80% of down time caused by tires.

With every improvement made on the No. 12, you are assured of still greater productivity, lower cost and longer work life. The proof of these machines is in their performance. That's why your Caterpillar Dealer is ready to demonstrate any of his three models of motor graders on *your* job. Call him today and name a date for your demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**

LCL Business Keyed to Service

Traffic men see need for new attitudes hinged on extension of pick-up and delivery if railroads are to recapture this neglected source of revenue

Which service is more useful to an LCL consignee waiting for merchandise at a suburban location:

A box car "delivered" to a metropolitan freight yard at dawn, or a through-movement highway trailer *unloaded* at his receiving platform a few hours later?

Unless that box car is unloaded by the railroad and prompt delivery service is provided, the question pretty well answers itself. If railroads are going to make less-carload business a major revenue-producer, and if they are going to halt diversion of such traffic to more flexible motor carriers, broader pick-up and delivery service would seem to be called for.

This was emphatically illustrated in a poll of shippers conducted by Railway Freight Traffic, monthly companion publication of Railway Age. Of 112 traffic men responding to the poll, 106 felt railroads ought to extend their PU&D limits to conform with established truck PU&D zones. Moreover, 102 shipper spokesmen thought this would not only permit railroads to retain traffic they are in danger of losing, but would help them regain LCL business already lost.

LCL Volume—According to the Interstate Commerce Commission, 6,986,406 tons of freight originated on Class I roads in LCL movements last year—about one-half of 1% of the total intercity freight volume of almost 1.4 billion tons. This was just 22,304 tons more than had been originated LCL the previous year, although there were 171 million more carload tons originated by Class I roads last year than in 1954.

Less-truckload tonnage by major motor carriers for 1954 and 1955 has not yet been reported by the ICC, but in 1953 LTL intercity volume came to 23,755,714 tons.

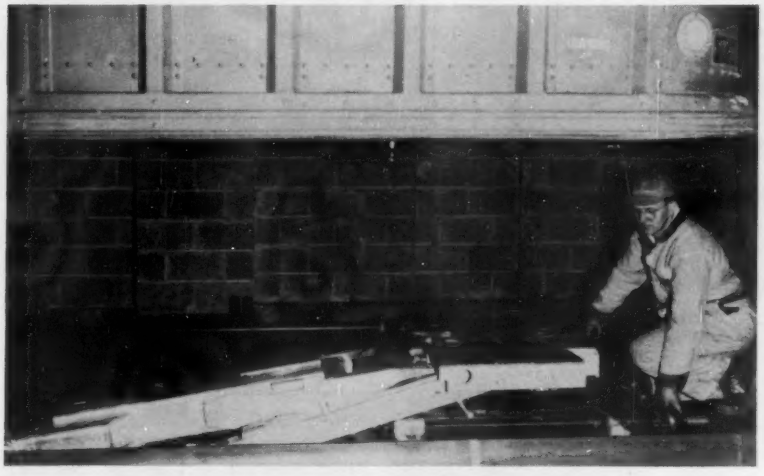
"Railroads, in their own self-interest, should make every effort to arrest the trend" to highway carriers, A. G. Anderson, general traffic manager, Socony Mobil Oil Company, New York, told Railway Freight Traffic.

Noting that "innovations" like piggyback were being used to turn the tide, Mr. Anderson declared that while "many obstacles" would have to be surmounted, "arrangements could be worked out which would return tonnage to the rails."

What Price Speed?—"Nothing is to be gained by fast rail merchandise schedules unless provision is also made for prompt pick-up and delivery service," according to F. L. O'Neill, general traffic manager, Minnesota Mining & Manufacturing Co., St. Paul. F. L. Thomas, traffic manager, Wisconsin Canners Association, Madison, agreed, saying railroads "should always be competitive" in delivery service "within city limits and adjacent territory."

Determining just what "adjacent territory" is, though, seems to be one of the obstacles to overcome. The "flight to the suburbs" is a real problem in the move to decentralize industry.

Only "a complete transportation service" can satisfy customers in fringe areas, H. E. Chapman, traffic manager, S. S. Kresge Company, Detroit, said. Similarly, W. E. Maley, general traffic manager, Pacific Coast Borax Company, Los Angeles, wrote



Piggyback Tie-Down Gear Is Simplified

Semi-automatic device for securing highway trailer to flat car in piggyback transport has been developed by ACF Industries, with cooperation of the Pennsylvania and Rail-Trailer Company. ACF "mast," shown here partially elevated from flat-car floor, moves up to brace trailer in place. It is said to be more than twice as strong under impact as other hold-down devices now in use, and to enable one man using power tool to secure trailer in place in 2½ minutes, including fastening rear-end safety chains, compared with five minutes needed by standard four-man crew. Stanchion folds down when out of use to allow trucks to clear it easily during loading and unloading. It eliminates special attachments on trailers, permitting unrestricted trailer interchange.

that railroads must be "very alert" to changing times and must "pick up in the same general areas as the truck lines" to remain competitive.

Getting in Step—J. W. Gilius, assistant general traffic manager, General Foods Corporation, White Plains, N. Y., said he thinks truck PU&D limits "are more realistic" than those fixed in railroad tariffs "many years ago," and he called for railroads to get "in tune with present day conditions."

The "one fatal weakness" in rail LCL service of confining PU&D to corporate limits, R. A. Whitty, transportation director, Belknap Hardware & Manufacturing Co., Louisville, pointed out, could be costing railroads business despite better service and lower rates.

The shipper spokesman also noted difficulties in determining exact limits of railroad PU&D zones. "We want to achieve the savings of rail LCL traffic," said Arthur Todd, traffic consultant, Lincoln Electric Company, Cleveland, but a shipper can't risk delays or added costs resulting from poorly defined rail PU&D zones, he added.

Territory invasion by roads extending PU&D service beyond their own stations was not viewed as a "major deterrent" by the traffic men who felt this should be worked out among the railroads for the good of themselves and their shippers.

The cost factor of extending the service brought some divergent views. Mr. Whitty (who is also LCL and merchandise committee chairman, National Industrial Traffic League), said the "increased tonnage attracted" would offset higher expenses. L. E. Galaspie, director of traffic, Reynolds Metals Company, Richmond, suggested railroads would have to "absorb the added cost" if it exceeded new revenues.

"Return to free pick-up and delivery at all LCL stations" was recommended by A. B. McComb, assistant treasurer, Smith Brothers, Inc., Poughkeepsie, while more attention to *service* was stressed by others as necessary for recapturing lost LCL business. Curt Wulff, vice-president, Kirk & Blum Co., Cincinnati, said railroads will have to abandon attitudes of "indifference and disdain" for LCL business if they want to win it back.

Cabinet Report Hearings End June 15

ICC and Department of Commerce will add to their testimony on that date—NIT League supports proposed bills

June 15 will be the closing date of the House Interstate Commerce Committee's hearings on pending bills to implement recommendations of President Eisenhower's Cabinet Committee on Transport Policy and Organization.

This was announced last week by Representative Harris, Democrat of Arkansas, who is chairman of the subcommittee conducting the hearings which have been under way since April 24. Chairman Harris' announcement also revealed that the closing session on June 15 will be devoted to further presentations from the Interstate Commerce Commission and the Department of Commerce.

Both of these agencies have already made presentations (Railway Age, April 30, page 10 and May 7, page 8). Secretary of Commerce Weeks was chairman of the Cabinet Committee. Generally, the ICC is opposed to the committee's rate-freedom proposals, which the railroads regard as the major recommendations; but it favors the proposal to sharpen the definition of private and contract carriage, and to repeal the bulk commodity exemption applicable to water carriers.

The National Industrial Traffic League was among those making presentations at hearing sessions subsequent to those reported in Railway Age of May 28, page 11. The principal League statement was made by the chairman of its legislative committee, William H. Ott, who is also general traffic manager of the Kraft Foods Company. Meanwhile, the league's position in favor of repealing the Interstate Commerce Act's section 22, and thus ending special rates for government agen-

(Continued on page 10)

T&P's "Faith" Advertising Receives More Honor

W. G. Vollmer (left), Texas & Pacific president, accepts the Laymen's Movement for a Christian World award, honoring the road's "faith" advertising program, from J. C. Penney (center), chairman of the board, J. C. Penney Company, and vice-president of the movement. Fred F. Florence, president of the Republic National Bank of Dallas and president, American Bankers Association, looks on. This was the second time in as many months the T&P's "faith" advertising had received recognition. The first award was presented by the Freedoms Foundation in March.

RAILWAY MARKET OUTLOOK THIS WEEK

a RAILWAY AGE Workbook Page

Carloadings Up.—Loadings of revenue freight in the week ended May 26 totaled 788,297 cars, the Association of American Railroads announced on May 31. This was an increase of 9,300 cars, or 1.2%, compared with the previous week; an increase of 2,708 cars, or 0.3%, compared with the corresponding week last year; and an increase of 99,005 cars, or 14.4%, compared with the equivalent 1954 week.

Loadings of revenue freight for the week ended May 19 totaled 778,997 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CAR LOADINGS
For the week ended Saturday, May 19

District	1956	1955	1954
Eastern	124,160	129,020	115,373
Allegheny	155,564	149,735	123,305
Pocahontas	63,354	61,487	48,889
Southern	132,445	128,261	116,026
Northwestern	125,730	125,113	115,487
Central Western	119,111	119,264	107,223
Southwestern	58,633	56,949	55,664
Total Western Districts	303,474	301,326	278,374
Total All Roads	778,997	769,879	681,967
Commodities:			
Grain and grain products	50,082	48,521	44,827
Livestock	6,090	7,100	7,455
Coal	135,430	128,636	103,071
Coke	13,373	11,928	7,723
Forest Products	46,720	45,234	41,717
Ore	85,561	79,428	69,823
Merchandise l.c.l.	60,217	62,518	61,122
Miscellaneous	382,524	386,514	346,224
May 19	778,997	769,879	681,967
May 12	777,606	752,645	677,540
May 5	770,558	736,904	647,954
April 28	778,398	725,900	647,925
April 21	763,437	701,432	626,182
Cumulative total, 20 weeks	14,276,647	13,332,991	12,463,681

Totals for Canada:

In Canada.—Carloadings for the seven-day period ended May 14 totaled 86,126 cars, compared with 87,241 cars for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
May 14, 1956	86,126	34,377
May 14, 1955	81,518	31,513
Cumulative Totals:		
May 14, 1956	1,480,598	668,405
May 14, 1955	1,321,216	596,697

New Equipment

FREIGHT-TRAIN CARS

► *Soo Line (Wisconsin Central).*—Ordered 15 70-ton Airslide cars from General American for delivery this year.

► *Union Tank Car Co.*—Ordered 123 tank cars, various capacities, from own shops, for delivery during second half 1956, first half 1957.

LOCOMOTIVES

► *Diesel-Steam Gap Widening.*—Ownership of diesel units by Class I roads was up to 25,283 April 1, compared with 25,166 on March 1 and 24,049 on April 1, 1955, AAR reports; steam ownership totals for same dates are 5,360, 5,559 and 7,718 respectively.

	Owned or Leased April 1		Stored Serviceable April 1		Waiting Repairs April 1	
	1956	1955	1956	1955	1956	1955
Diesel (A & B units)	25,283	24,049	23	62	879	908
Steam (locomotives)	5,360	7,718	835	1,982	984	1,215
Electric (units)	632	657	12	13	76	75

New Facilities

► *Chicago & North Western.*—Will spend $4 million more on maintenance of way and structures in 1956 than during 1955, including one million new ties and 100 miles of new rail, if steel deliveries can be obtained.

► *Illinois Central.*—New construction projects in the 63rd Street depot and office building, Chicago, to cost about $295,000, include: conversion of existing hydraulic passenger elevators to automatic control; baggage elevator to hydraulic with electric interlocks; existing coal burning boilers to low-pressure, oil-fired operation.

► *Indianapolis Union Railway.*—Jointly participating with the Pennsylvania and state of Indiana in $3,744,000 grade separation on Madison avenue, Indianapolis, Ind.; project, already underway, is scheduled to be completed in spring of 1958; two new offices are also being constructed in southeast corner of waiting room at Indianapolis Union Station, estimated cost $31,109; Union Station ticket office is being modernized (estimated cost $40,000), including installation of new counter and ticketeer machines.

► *Missouri Pacific.*—Ordered equipment from General Railway Signal Company for installation of 39 miles of centralized traffic control between Holland, Ark. and Bald Knob, and 13 miles between Leeds, Mo., and Kenneth, Kan.

► *Pennsylvania.*—Will include Western Union Intrafax system in $2,000,000 modernization of ticket sales and service bureau in New York's Pennsylvania Station; system, already in use in Pittsburgh and Philadelphia, will be demonstrated to 120 large business accounts in New York City with offer of month free trial, free installation and maintenance at $55 a month charge; scheduled for operation by fall.

(Continued from page 8)

cies, was set out in another statement made by the acting chairman of its special committee on government rates, John R. Staley, vice-president of the Quaker Oats Company. The Cabinet Committee recommended changes in section 22's provisions, but not repeal. However, a bill proposing repeal is also before the subcommittee.

The league's over-all position, as Mr. Ott put it, was one of "general agreement with the theory and underlying philosophy" of the Cabinet Report. It does not, however, approve in detail all recommendations of the report.

Transport Policy—Dealing first with the proposed rewriting of the declaration of national transportation policy, Mr. Ott said the league supports a revised statement of the policy, but wants to make it clear that the policy is only a "preamble" to the act and "guide" to the administration of authority elsewhere granted in the act. In other words, the league wants to leave no doubt that the policy "is in itself intended to neither expand nor limit any substantative provisions contained in the body of the act."

As to the Cabinet Committee's rate-freedom proposals, the league, like the railroads, favors addition of the "three shall nots" to the rate-making rule. They would prevent the ICC from considering the effect of a proposed rate on a competing mode of transportation. At the same time, Mr. Ott emphasized the league's desire to keep in the rule the commission's authority to consider the effect of proposed rates on the movement of traffic.

Limitation of the commission's rate power to authority to prescribe maximum and minimum rates seems to the league "an essential part of the over-all Cabinet Report program of more freedom to carrier management and wider scope to competitive forces," Mr. Ott continued. The league favors such a limitation.

Suspension Period—It also recommends that the period for which the commission may suspend tariffs be reduced from seven months to six months. The Cabinet Committee recommends a cut to three months, which the league considers "completely unrealistic." Moreover, the league's suggestion that the period be made six months is accompanied by a proposal that provision be made for record-keeping and refunds by carriers in cases where rates higher than those finally approved become effective before issuance of the ICC report involved.

Among the Cabinet-Report recommendations opposed by the league are proposals to sharpen definitions of private and contract carriage, and to repeal the exemption from regulation of water transportation of commodities in bulk. Meanwhile, it favors giving the ICC authority to override state commissions to permit abandonment of unprofitable intrastate railroad services.

The U. S. Chamber of Commerce and the National Coal Association also favor this latter proposal. Their presentations were made, in turn, by Grant Arnold, a member of the chamber's Transportation and Communication Committee and general traffic manager of E. J. Lavino & Co., Philadelphia, Pa.; and by F. F. Estes, director of the NCA's Transportation Department.

Both also favor rewriting the national transportation policy, but the chamber favors generally the rate-freedom proposals which are opposed by NCA. There now exists "an extremely wide area of rail managerial discretion in rate making," Mr. Estes said, adding: "The coal industry is of the firm opinion that commission regulation should not be further relaxed as to commodities to which there is no inter-carrier competition."

In expressing the chamber's position in favor of repealing section 22, Mr. Arnold said the government's special privileges in that regard are being "badly abused." He had in mind the way government agencies have "played one carrier against another for a bargain rate."

Secretary of Commerce Weeks said at a recent press conference that he is not optimistic about prospects for Cabinet-Report legislation at this session of Congress, but he is optimistic as to the long-run prospects. He is not discouraged with the "progress" made thus far.

The Harris subcommittee, he added, has been "friendly" and has been disposed to study "all angles" of the transport problem. The problem "takes a lot of study," Mr. Weeks also said; and he predicted that "with good luck, if we keep at it," some of the recommended legislation may eventually be enacted.

Technical Tidings

Selected from June Railway Monthlies

Standardized and simplified wiring arrangements on New York Central diesels permit multiple-unit operation of locomotives built by all four manufacturers. New York Central's experience, and details of some of the changes, are given in Railway Locomotives & Cars.

•

Construction of the New York Central's four-track vertical-lift span across the Harlem river at New York required that the old swing span be dismantled piecemeal. Railway Track & Structures shows how the job was done with the aid of oxy-acetylene cutting torches.

•

How the new signal repair shop at Savannah, Ga., saves money for the Atlantic Coast Line is explained in Railway Signaling & Communications. The shop, housed in a new fireproof building, 50 by 250 ft, includes electrical equipment, machine tools and other facilities to make repairs efficiently on a large scale.

•

Details and drawings of the wide-door box car designed and built by the Seaboard Air Line appear in Railway Locomotives & Cars. This was the car briefly described in a recent Railway Age.

•

Training operators for maintenance-of-way work equipment is a problem because of the large amounts of such equipment in use on railroads. An article in Railway Track & Structures tells how the Reading has solved the problem by a course of instruction that starts with classroom sessions followed by additional training and qualification in the field.

•

The Maybach engine and Baldwin's radical power truck for the "Xplorer" locomotive are described in considerable detail in Railway Locomotives & Cars.

Johnson Quits ICC After 16 Years

Colonel J. Monroe Johnson's 16 years of service as a member of the Interstate Commerce Commission ended this week. His resignation, effective June 4, was accepted by President Eisenhower in a letter which told the colonel he should "take great satisfaction from your large contribution to the work of the commission."

Colonel Johnson's letter of resignation had told the President that "your appointments to this commission are all outstanding." Colonel Johnson's successor, Donald P. McPherson, Jr., who was scheduled to take his oath of office June 4, is the ninth Eisenhower appointee to the commission. The only pre-Eisenhower appointees remaining are Chairman Anthony F. Arpaia and Commissioner Richard F. Mitchell.

J. Monroe Johnson

"You may be confident," Colonel Johnson also told the President, "that the commission as now constituted will continue both its wise decisions and the voluminous production for which it has long been celebrated."

Colonel Johnson's term expired at the end of last year, but he continued to serve at the request of the White House which had previously undertaken to oust him under the federal government's retirement-at-70 rule. The colonel is 78. His refusal to be ousted was based on legal advice to the effect that the specific-term provisions of the Interstate Commerce Act override requirements of the retirement-at-70 law.

Colonel Johnson's career with the federal government included his service during World War II as director of the Office of Defense Transportation. He remained a member of the commission during that period, and he has served twice as the commission's chairman. From 1935 until 1940, he was assistant secretary of commerce.

Colonel Johnson was born in Marion, S. C., May 8, 1878. A civil engineer, he received his education at the University of South Carolina, and at Furman University, Greenville, S. C. He opened an office for the practice of civil engineering at Marion in 1898, and has maintained it ever since.

Commissioner McPherson is a Pennsylvania Republican, who was a member of the Pennsylvania state senate at the time of his appointment and confirmation for membership on the commission. This confirmation by the U. S. Senate came some time ago.

Air Lines Luring More Passengers

They handled 2/3 of 1955's first-class travelers and more than 1/4 of its coach travelers

Regularly scheduled domestic air lines in 1955 handled 66% of the combined first-class air and rail passenger-miles, and 27.9% of the combined coach business. Revenue passenger-miles of the air lines were up 18.2% from 1954, while railroad passenger business was off slightly.

This showing of the air lines' continuing gains was reported by the ICC's Bureau of Transport Economics and Statistics in its "Transport Economics." Other comparative figures back through 1946 are shown in the accompanying table. The air figures are confined to so-called domestic trunk lines, and thus do not cover "irregular carriers, territorial carriers, helicopters, feeder or local air lines."

Air vs. Rail Revenue Passenger-Miles
(millions)

Year	First-class				Coach	
	Rail parlor and sleeping car	Air regular flights*	Per cent air of rail and air combined	Rail excluding commutation	Air	Per cent air of rail and air combined
1946 ...	19,801	5,903	23.0	39,039	....	....
1947 ...	12,261	6,016	32.9	27,660	....	....
1948 ...	11,015	5,840	34.6	24,315	*	....
1949 ...	9,349	6,322	40.3	20,273	249	1.2
1950 ...	9,338	6,710	41.8	17,443	1,056	5.7
1951 ...	10,226	8,939	46.6	19,524	1,272	6.1
1952 ...	9,504	9,775	50.7	19,758	2,346	10.6
1953 ...	7,950	10,580	57.4	18,955	3,717	16.4
1954 r ..	6,850	10,925	61.4	17,687	5,321	23.1
1955 ...	6,441	12,489	66.0	17,314	6,716	27.9

* As air coach service began in 1948, the "regular" figure for that year contains a small number of air coach passenger-miles.
r Revised.

Car Fleet Gained 2,893 Units in April

Class I railroads added 2,893 freight cars to their serviceable fleets in April.

This was reported by Chairman A. H. Gass of the Car Service Division, Association of American Railroads, who noted also that the serviceable fleet, as of May 1, included 25,000 more cars than a year earlier. The latter comparison allows for the change in classification of railroads made effective by the Interstate Commerce Commission at the beginning of this year.

Mr. Gass' figures were in his latest review of "The National Transportation Situation." In further comment on car-supply conditions, the review reflected the railroad industry's concern about detention of cars by shippers.

April checks indicated that 20% of cars placed during that month were detained beyond the free time. That compared with 17.39% for April 1955, and it was the highest April figure since 1950. On the matter of clean cars, Mr. Gass said that, in April, railroad agents reported 2,202 cars were left with debris and strapping by consignees.

The May 1 bad-order percentage was 4.1. As Mr. Gass pointed out, this indicated the bad-order backlog would have to be reduced by only 1,537 additional cars to bring it down to the railroads' goal of 4% of ownership.

Passenger Deficit $637 Million

Down $33 million from 1954, it was smallest reported since 1950's $508.5 million

Last year's passenger-service deficit of Class I line-haul railroads was $636.7 million, the smallest reported since 1950's $508.5 million.

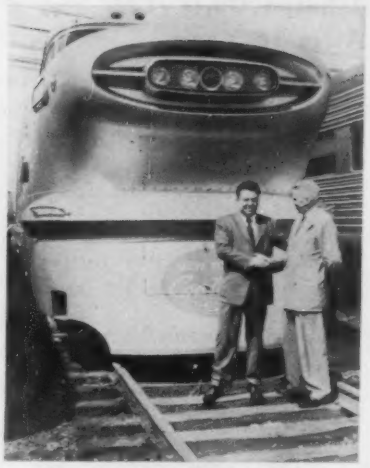
It was nearly $33 million less than the 1954 deficit of $669.5 million, and $68 million less than 1953's $705 million, the largest on record. The 1955 deficit absorbed 36.1% of that year's freight-service net railway operating income, which was $1,128 million.

These figures were in the May issue of "Transport Economics," published by the Bureau of Transport Economics and Statistics of the ICC. The data also included the accompanying table showing last year's financial results of passenger and freight services of large railroads. Of the roads shown, only the Long Island had a net railway operating income from passenger service in 1955.

Comparison of Passenger-Freight Financial Results

Large railroads, year 1955, (Dollar items in thousands)

Road	Net railway operating income			Operating ratio	
	Freight service	Passenger and allied services (deficit)	Per cent passenger deficit of freight net railway operating income	Freight service	Passenger and allied services
EASTERN DISTRICT					
Baltimore & Ohio	$ 71,534	$32,635	45.6	72.78	180.77
Boston & Maine	19,145	12,250	64.0	56.80	156.42
Central of New Jersey	11,302	6,736	59.6	65.90	160.36
DL&W	7,451	4,822	64.7	77.94	122.86
Erie	24,560	9,545	38.9	72.37	159.79
Lehigh Valley	12,599	4,345	34.5	74.80	159.20
Long Island	1,196	cr. 205	--	72.04	89.41
New York Central	111,282	37,788	34.0	69.32	114.02
NYC&StL	25,238	3,365	13.3	65.54	180.66
NYNH&H	19,988	14,165	70.9	65.36	105.90
Pennsylvania	119,013	49,976	42.0	73.30	117.82
Reading	21,921	6,830	31.2	69.72	161.14
Wabash	21,131	3,566	16.9	68.99	121.21
POCAHONTAS REGION					
Chesapeake & Ohio	80,891	11,982	14.8	64.06	165.89
Norfolk & Western	48,806	10,965	22.5	60.21	213.47
SOUTHERN REGION					
Atlantic Coast Line	25,615	12,712	49.6	72.25	138.70
Gulf, Mobile & Ohio	14,486	4,655	32.1	66.19	140.58
Illinois Central	46,441	14,212	30.6	64.71	129.98
Louisville & Nashville	42,091	13,076	31.1	69.40	154.89
Seaboard Air Line	34,241	9,878	28.8	61.96	134.31
Southern	63,695	15,265	24.0	56.40	138.29
WESTERN DISTRICT					
AT&SF and affiliated companies	114,631	40,858	35.6	60.85	136.33
Chicago & North Western	25,998	18,331	70.5	72.42	141.10
CB&Q	48,181	21,695	45.0	65.04	143.40
CMStP&P	37,054	21,274	57.4	73.56	155.84
CRI&P	37,918	16,938	44.7	63.08	142.96
D&RGW	19,569	4,615	23.6	54.40	177.92
Great Northern	52,167	22,012	42.2	62.67	181.32
M-K-T Lines	12,876	6,515	50.6	68.60	169.28
Missouri Pacific	40,223	12,720	31.6	70.49	142.41
Northern Pacific	34,612	15,388	44.5	69.04	181.60
St. L.-San Francisco	23,139	8,924	38.6	68.20	164.68
St. L. S. W. Lines	11,954	1,268	10.6	56.69	214.87
Southern Pacific	92,979	43,450	46.7	69.72	161.94
Texas & New Orleans	14,546	6,785	46.6	71.41	149.13
Texas & Pacific	15,765	5,611	35.6	61.65	149.74
Union Pac. & leased lines	90,334	46,223	51.2	60.33	166.57



"Aerotrain" for Mexico?

N. C. Dezendorf (right), vice-president and general manager of the Electro-Motive Division of General Motors Corporation, greets Roberto Amoros, general manager of the National of Mexico, when the latter recently inspected EMD's "Aerotrain."

Agreed Charges Make Truckers Wail

Proof of the "agreed charges" pudding, according to L. B. Unwin, vice-president, finance, Canadian Pacific, is indicated by the protests from competing truckers.

"The charges are working out very well for us" but have proved "a source of annoyance" to truck lines, Mr. Unwin told the New York Society of Security Analysts recently. The agreed charges technique is "quite a factor" in the CPR's freight business, he said, and has "facilitated recapturing considerable traffic from competitors." CPR is going ahead with the device and is "constantly" working out agreements with larger companies, Mr. Unwin added.

One problem in the CPR's traffic business is the low freight rates required by law in the movement of western grain. He said "vested interests" are well organized in keeping the rates low, but an increase should be approved by autumn.

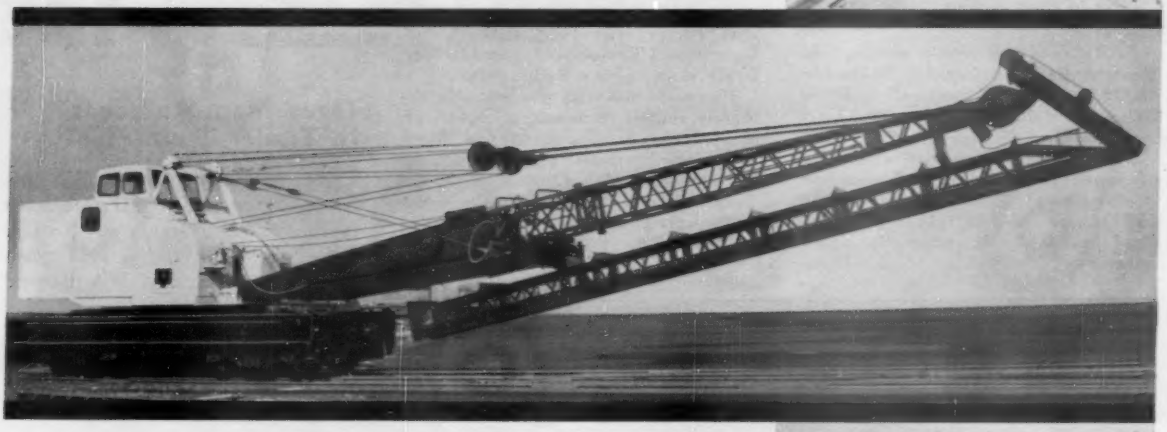
On the subject of competition, Mr. Unwin said having the Canadian National as the chief CPR competitor raises "a number of problems." He said that, although the CPR had met the challenge presented by this situation, he would welcome a non-government-owned competitor "100%."

As to truck lines absorbed by the CPR for extending its coordinated truck-rail service, Mr. Unwin declared that "we don't and never have made as much from them as was ostensibly made" by the former owners. But, he continued, the lines have proved valuable in providing better service and making some rail abandonments feasible.

IC Starts Chicago to New Orleans Piggyback

Illinois Central on June 7 will extend its piggyback service to link New Orleans with Memphis and Chicago. Further piggyback service extensions, including additional on-

LATEST TYPE BROWNHOIST DIESEL ELECTRIC PILE DRIVER AT WORK FOR AMERICA'S RAILROADS



BROWNHOIST DIESEL ELECTRIC PILE DRIVERS HAVE THE SPEED TO GET OFF MAIN LINES QUICKLY, AND THE LONG LEADERS AND FULL CIRCLE ROTATION TO WORK IN ANY POSITION

Propelled by electric travel motors, these Industrial Brownhoist machines are capable of road speeds up to 18 miles per hour . . . they get on and off main lines in a hurry. Strut and leaders fold away for travel, allowing full railroad clearance, and they're quickly and easily fastened in upright position for battering. The Brownhoist rotates in a full circle, and its leader reach of 28'6" from center of rotation gives it a wide working range. A large Diesel engine supplies the power for the heavy-duty Brownhoist machine. It has a maximum leader load of 26,000 pounds, and is equipped with power battering to sink piles as large or larger than that shown in the upper photograph. For further information about Diesel Electric Pile Drivers or other heavy-duty materials handling equipment, write today for your copy of the new Industrial Brownhoist catalog.

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BROWNHOIST

BROWNHOIST MATERIALS HANDLING EQUIPMENT GIVES A LIFT TO AMERICAN INDUSTRY

SUBSIDIARY OF Penn-Texas

INDUSTRIAL BROWNHOIST CORPORATION
BAY CITY, MICHIGAN • DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago, San Francisco, Montreal
AGENCIES: Detroit, Birmingham, Houston

CASH AWARDS FOR OLDEST ISSUES OF RAILWAY AGE

Railway Age, celebrating its hundredth anniversary this fall, will award $100 to the person or firm which submits proof of ownership of the copy of this paper—or its predecessors—bearing the oldest dateline. Holder of the second oldest copy will get $50.

Holder of the oldest issue and runners-up will be announced in Railway Age's Centennial Issue, which will "take stock" of the railroad industry on a comprehensive scale with "a look behind, around, and ahead."

Railway Age has three separate lines of ancestry; the oldest issue of any of the three will qualify. Here they are:

1. *Railroad Gazette*—starting as Western Railroad Gazette, November 15, 1856, dropped "western" in 1870. Remained Railroad Gazette until merger with Railway Age in 1908.

2. *Railway Age*—started with issue of June 17, 1876. In 1891 absorbed Northwestern Railroader (founded 1887), and added its title to the masthead until 1901, when it again became Railway Age alone. Upon merger with the Gazette the paper used the combination title Railway (later Railroad) Age Gazette. In 1918 the durable title Railway Age again emerged intact.

3. *Railway Review*—starting as the Chicago Railway Review in 1868, became Railway Review in 1879; Railway & Engineering Review in 1897 and again Railway Review in 1914. It was absorbed by Railway Age in 1927.

Do not be fooled by differences in size and appearance of the older issues. All three lines of ancestry ran numerous small advertisements — mostly non-illustrated—on the front covers—which, on Gazette and Age, were yellow. The sizes of both the Gazette and Review were considerably larger than today's Railway Age.

Please do not send the issues to us. Merely submit statement of proof, or a photostat or photograph of front cover or masthead page to Editor, Railway Age, 30 Church st., New York 7. To be eligible, entries must be received no later than July 1, 1956. Sorry, public libraries and archives don't count.

line cities and interchange operations, are being planned.

The new service will provide second-morning deliveries at New Orleans and Chicago. The IC began handling truck trailers on flat cars between Chicago and Memphis in June 1955, with service limited to LCL at regular LCL rates. Last October, the service was broadened to handle truck load shipments at truck competitive rates.

"Spiderweb" chain hoist equipment developed by the IC is used in its piggyback service to secure trailers to flat cars instead of the usual windlass, lever, or turnbuckle equipment. Springs in the chain hoists eliminate shock and vibration while the trailer is in transit. Chain hoists make it possible to secure or release a trailer in two to three minutes.

Higher Demurrage Charges Proposed

A proposal to increase rates and amend regulations under which demurrage charges are assessed against shippers for detention of freight cars is being submitted to a vote of car-owning railroads. The vote was ordered by the board of directors of the Association of American Railroads.

The proposed changes, which would be the first since 1949, would fix demurrage rates at $4 for each of the first two days after the free-time allowance for loading and unloading, $7 for each of the next two chargeable days, and $10 per day thereafter. No change is proposed in the present 48-hour allowance of free time, but changes are proposed in the method of calculating demurrage charges.

In the latter connection, the number of credits which may be used to offset debits on cars which are under the average agreement on demurrage would be reduced from four days to two. Under present rules, Saturdays, Sundays and holidays are excluded from chargeable time on cars handled under the straight, or individual car, plan but are excluded as chargeable days on cars under the average agreement. As proposed, straight-plan cars would receive the same treatment as average-agreement cars, with Saturdays, Sundays and holidays included for demurrage purposes—but demurrage would not be charged for those days if they occurred prior to or during the 48 hours of free time.

The vote will be by car ownership. If the proposed changes are approved by roads owning a majority of the cars, they will be subject to final approval by the Interstate Commerce Commission.

"The proposed changes are designed to increase the availability of freight cars and to recognize the increased costs of car ownership," said AAR President W. T. Faricy in announcing the board's action. Mr. Faricy also said that "in an effort to alleviate car shortages, railroads have placed orders for approximately 145,000 new freight cars and have taken steps to increase the availability and effective use of the present car fleet."

Three More Railroads In Trailer Train Plan

The Missouri Pacific, the Missouri-Kansas-Texas and the Frisco have joined the Pennsylvania and Norfolk & Western in the Trailer Train pooling of piggyback cars on a national basis.

James P. Newell, president of Trailer Train Company, announced that other railroads are expected to participate in the interchange service soon.

Formation of Trailer Train Company was announced in Railway Age, Dec. 26, 1955, p. 7. The company purchased 500 75-ft piggyback flat cars from Pennsylvania and has ordered 1,000 35-ft. flat cars from ACF Industries. Mr. Newell explained that this equipment is to be used much the way private companies now operate pools of refrigerator cars.

The Frisco, M-K-T and MoPac will share ownership in Trailer Train Company with the PRR, N&W and the Rail-Trailer Company of Chicago, and will be represented on the board of directors, Mr. Newell said.

Financial

Atchison, Topeka & Santa Fe.—*Stock Split.*—This road has applied to the ICC for authority to issue the stock necessary to make effective its plan for splitting its present shares on a five-for-one basis. The new stock would include 24,275,950 shares of common and 12,419,950 shares of preferred, both with par value of $10 per share. They would be substituted, in

(Continued on page 26)

"Leads the way to lower costs"

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NI-RESIST* MANIFOLD

*TRADE MARK REGISTERED U. S. PATENT OFFICE BY THE INT'L. NICKEL CO., INC.

Shown here are typical parts of NI-RESIST Exhaust Manifold for 9 x 10½ Diesel Locomotive Engines.

SERVICE LIFE OF EXHAUST MANIFOLD PARTS INCREASED 5 TIMES

In order to function properly this exhaust manifold requires free movement through a series of slip joints. Prior to the development of Hunt-Spiller Ni-Resist Iron for these parts the slip joints in this critical application would scale, grow and freeze due to high service temperatures. These conditions caused heavy distortion and a rupture of parts, resulting in very low service life. The high temperature properties of Hunt-Spiller Ni-Resist inhibit growth and scaling and offer the perfect solution to a long time critical maintenance problem. Hunt-Spiller Ni-Resist produced to guaranteed analysis entirely in electric furnaces has actually increased service life five times over previous experience, resulting in substantially lower costs per locomotive mile.

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Questions and Answers

Of current interest to the Transportation Department

Occasionally a car is spotted on consignee's tracks for unloading, and thereafter it develops that car must be unloaded from the opposite side from that spotted. What is the proper application of the demmurrage rules in such a case? That is, *Who was responsible for faulty placement* . . .

?

How does a strike at a plant affect the demurrage account when the plant cannot handle inbound loads, but can load outbound . . .

?

How should demurrage be computed on a car refused by the consignee after placement, when the car was switched, and later ordered back . . .

?

CONDUCTED By G. C. RANDALL, district manager, Car Service Division (ret.), Association of American Railroads, this column runs in alternate weekly issues of this paper, and is devoted to authoritative answers to questions on transportation department matters. Questions on subjects concerning other departments will not be considered, unless they have a direct bearing on transportation functions. Readers are invited to submit questions, and, when so inclined, letters agreeing or disagreeing with our answers. Communications should be addressed to Question and Answer Editor, Railway Age, 30 Church Street, New York 7.

Depends on shipper's placards

The Association of American Railroads' committee on demurrage and storage recently took the following action to be applied in such cases:

"The following is *recommended* to govern in the application of demurrage rules on cars desired placed for unloading from a certain side:

"When shipment is loaded in a car in such a way that the unloading must be from a certain side, and the shipper placards the car accordingly, it should be so placed at destination. For demurrage purposes there has not been a proper actual placement until such placement has been made.

"When the car is not so placarded or is erroneously placarded and is not placed permitting unloading from the desired side, there is no liability on the part of the railroad. Any delay incident to turning and replacement is chargeable to the consignee, except that when the railroad makes a charge for such movement the time thereto shall not be computed against the car."—*Eastern Association of Car Service Officers.*

Strike rate applies in this case

A car of coal was placed on consignee's private siding on a Friday. On the following Monday, the consignee refused the car account quality, the car having been transferred en route. The car then was removed from the consignee's siding.

Nine days later, the consignee ordered the car replaced on the siding, since he had arranged with the shipper to accept the coal. A switching charge was assessed for the replacement of the car on consignee's siding. How should demurrage be computed?

A strikebound plant, although unable to accept inbound loads currently, was able to load out some of its production for which empty cars were placed on loading platforms by the carrier without interference.

Does the fact that the consignee was able to load out some cars affect the application of the strike rate on cars held for unloading under constructive placement? Should cars of coal unloaded for maintenance purposes, and the cars which were loaded outbound during the strike period, be placed in the consignee's regular inbound and outbound average agreements?

The answer to the first question is "No" and to the second "Yes."—*Eastern Association of Car Service Officers.*

First placement with consignee is basis

Item 20(b) of Demurrage Tariff 4-C reads:

"The disposition at point of detention determines the purpose for which a car is held and the rule applicable thereto, except where there is specific tariff provision to the contrary."

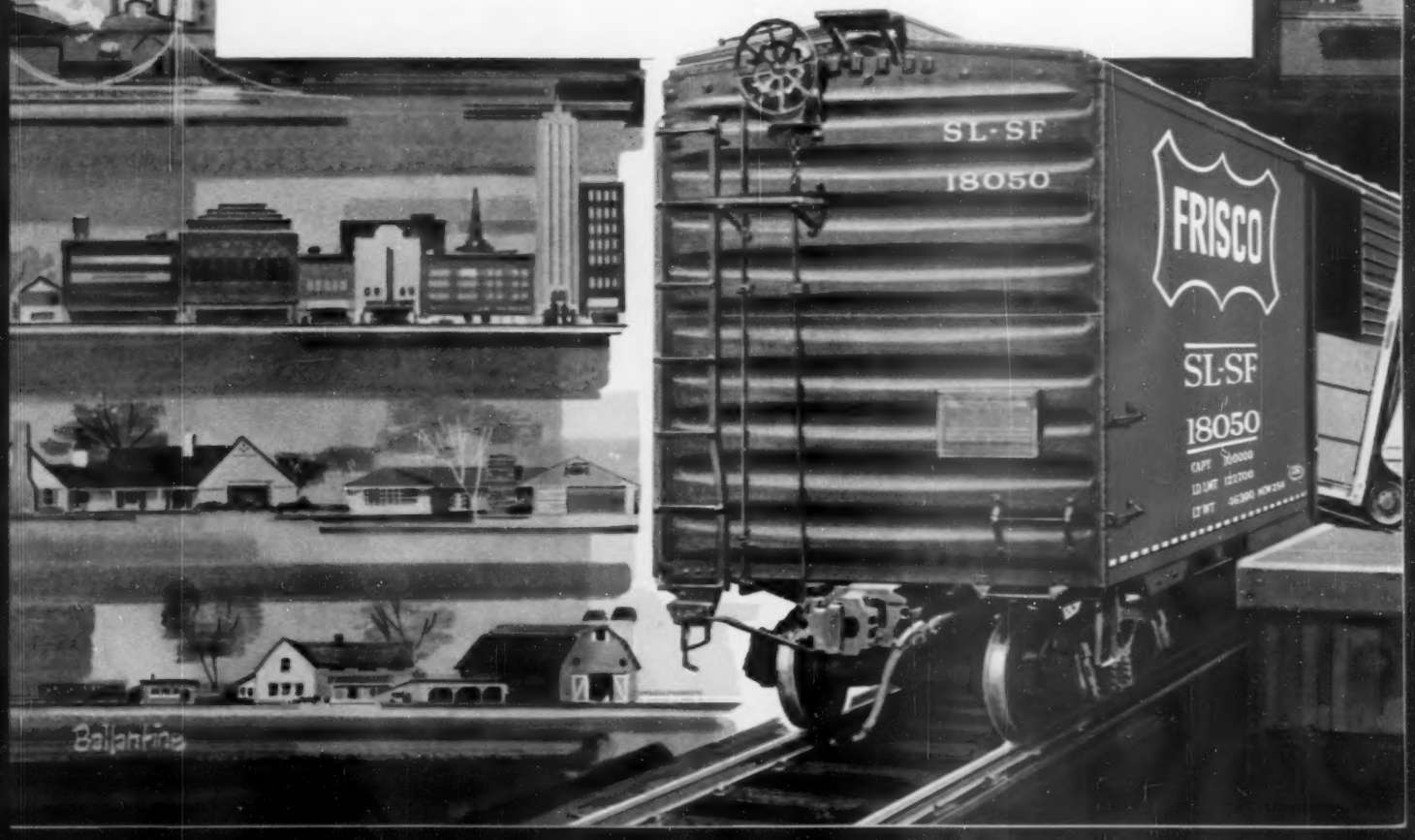
Inasmuch as the car was received for unloading and the final disposition was unloading by the consignee, it must be treated as a car held for unloading from the first tender for which 48 hours' free time is allowed, after which detention is assessable until the loading is completed and the car released.—*Eastern Association of Car Service Officers.*

workhorses on wheels

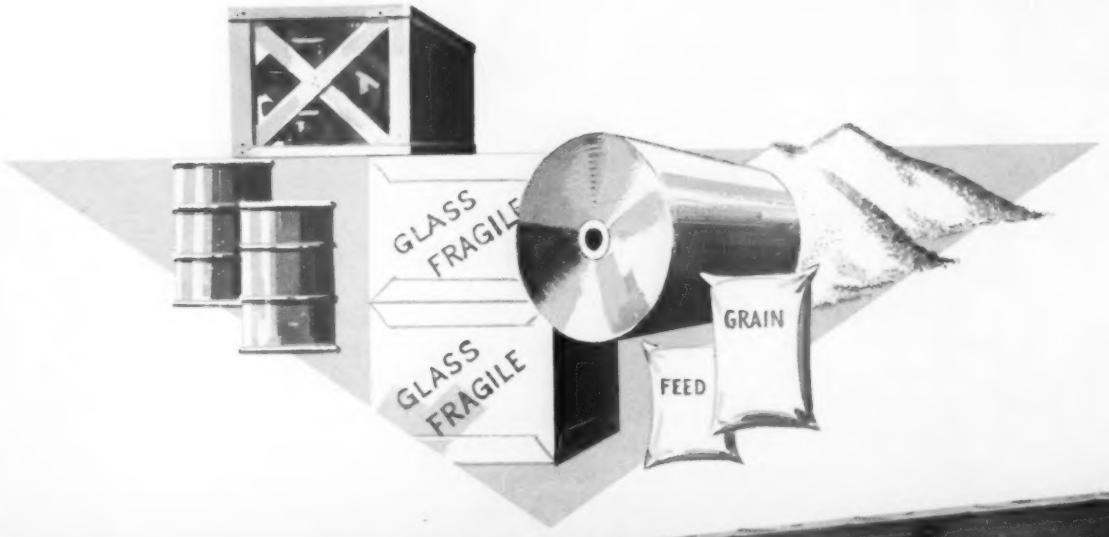
FRISCO *the St. Louis-San Francisco Railway is well served by PS-1 Standardized Box Cars*

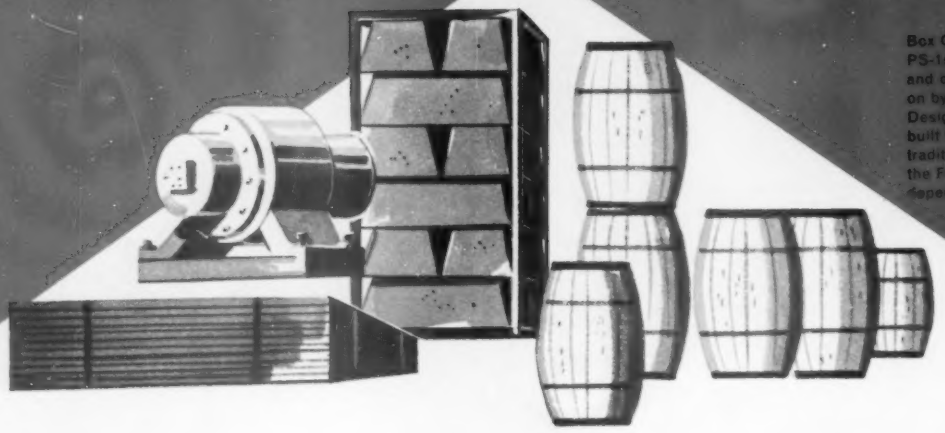
In its slogan "Ship It On The Frisco!" the St. Louis-San Francisco Railway does not limit or qualify the transportation job it is willing to do . . . and is doing every day. This important railroad is a major user of PS-1 Standardized Box Cars. It relies on dependable PS-1 workhorses for the kind of rolling stock performance and versatility that makes its slogan meaningful to Frisco shippers and consignees. Frisco box car No. 18050 was selected as typical of the PS-1 Standardized Box Cars in the Frisco fleet. It is also representative of the 72,768 PS-1s that 73 other service-conscious railroads have put to work.

The movement record of Frisco PS-1 No. 18050 which appears in these pages demonstrates the scope of its on-line and interchange travels during the first year of its life. Since Frisco 18050 was used in general service it experienced all the lading and operational conditions to which box cars are subjected. The high level of its performance and dependability is confirmed by the fact that since No. 18050 the Frisco has ordered 1700 more PS-1 Box Cars.



the FRISCO's PS-1s...





Box Car No. 18050 is typical of the 3500 PS-1s the Frisco has in service or on order . . . and of the more than 72,768 PS-1s relied on by 73 other shipper conscious railroads. Designed, engineered, tested, and built to handle the entire range of lading traditionally entrusted to box cars, PS-1s help the Frisco maintain its reputation for dependability among shippers and consignees.

hardworking, dependable, STANDARDIZED

FRISCO PS-1 No. 18050 *movement record . . . first year of service*

FROM	TO/AT	DATE
		1954
P-S Bessemer Shops	Bessemer, Ala.	Feb. 8
Bessemer, Ala.	Pratt City, Ala.	8
Pratt City, Ala.	Yale, Tenn.	9
Yale, Tenn.	Chaffee, Mo.	12
Chaffee, Mo.	St. Louis Yd., Mo.	12
St. Louis, Mo.	Missouri Pacific	13
Missouri Pacific	Alton & Southern	13
Alton & Southern	New York Central	14
New York Central	Nickel Plate	15
Nickel Plate	Chesapeake & Ohio	16
Chesapeake & Ohio	New York Central	23
New York Central	Boston & Maine	Mar. 17
Boston & Maine	Delaware & Hudson	26
Delaware & Hudson	Lehigh Valley	Apr. 1
Lehigh Valley	Chesapeake & Ohio	3
Chesapeake & Ohio	Chicago & Eastern Illinois	6
Chicago & Eastern Illinois	Missouri Pacific	7
Missouri Pacific	St. Louis, Mo.	12
St. Louis Yd., Mo.	Crystal City, Mo.	14
Crystal City, Mo.	Ste. Genevieve, Mo.	15
Ste. Genevieve, Mo.	Cape Girardeau, Mo.	16
Cape Girardeau, Mo.	Chaffee, Mo.	20
Chaffee, Mo.	St. Louis Yd., Mo.	20
St. Louis, Mo.	Missouri Pacific	21
Missouri Pacific	Manufacturers Ry.	22
Manufacturers Ry.	Missouri Pacific	26
Missouri Pacific	Santa Fe	30
Santa Fe	Union Pacific	May 2
Union Pacific	Wabash	2
Wabash	Chesapeake & Ohio	4
Chesapeake & Ohio	Belt Railway of Chicago	12
Belt Railway of Chicago	Chicago & North Western	18
Chicago & North Western	Union Pacific	28
Union Pacific	Rock Island	June 4
Rock Island	Fort Dodge, Des Moines & Southern	10
Fort Dodge, Des Moines & Southern	Milwaukee Road	13
Milwaukee Road	Chicago, North Shore & Milwaukee	26
Chicago, North Shore & Milwaukee	Elgin, Joliet & Eastern	28
Elgin, Joliet & Eastern	Baltimore & Ohio	29
Baltimore & Ohio	Southern	July 3
Southern	Monon	13
Monon	Belt Railway of Chicago	14
Belt Railway of Chicago	Soo Line	14
Soo Line	Milwaukee Road	21
Milwaukee Road	Indiana Harbor Belt	23
Indiana Harbor Belt	Nickel Plate	23
Nickel Plate	Delaware, Lackawanna & Western	24
Delaware, Lackawanna & Western	Delaware & Hudson	Aug. 12
Delaware & Hudson	Boston & Maine	13
Boston & Maine	New Haven	19
New Haven	Lehigh & Hudson River	22
Lehigh & Hudson River	Delaware, Lackawanna & Western	22
Delaware, Lackawanna & Western	Nickel Plate	23
Nickel Plate	Gulf, Mobile & Ohio	24
Gulf, Mobile & Ohio	Santa Fe	Sept. 2
Santa Fe	Texas & Pacific	28
Texas & Pacific	Missouri-Kansas-Texas	28
Missouri-Kansas-Texas	St. Louis—Southwestern	Oct. 7
St. Louis—Southwestern	Louisiana & Arkansas	9
Louisiana & Arkansas	New Orleans Public Belt	13
New Orleans Public Belt	Southern	16
Southern	Texas & New Orleans	23
Texas & New Orleans	International-Great Northern	Nov. 3
International-Great Northern	St. Louis, Brownsville & Mexico	13
St. Louis, Brownsville & Mexico	International-Great Northern	29
International-Great Northern	St. Louis, Brownsville & Mexico	30
St. Louis, Brownsville & Mexico	Texas & New Orleans	Dec. 2
Texas & New Orleans	Missouri-Kansas-Texas	4
Missouri-Kansas-Texas	International-Great Northern	10
International-Great Northern	St. Louis—Southwestern	21
		1955
St. Louis—Southwestern	Illinois Central	Jan. 3
Illinois Central	Missouri Pacific	3
Missouri Pacific	Memphis, Tenn.	5
Memphis, Tenn.	Birmingham, Ala.	6
Birmingham, Ala.	Central of Georgia	7
Central of Georgia	Seaboard Air Line	20
Seaboard Air Line	Gulf, Mobile & Ohio	Feb. 3
Gulf, Mobile & Ohio	Terminal R.R. Assoc. of St. Louis	7
Terminal R.R. Assoc. of St. Louis	St. Louis, Mo.	8
St. Louis, Mo.	Springfield, Mo.	9
Springfield, Mo.	Kansas City, Mo.	9
Kansas City, Mo.	Union Pacific	10

Among the earliest buyers of PS-1s, the shipper-conscious St. Louis-San Francisco Railway Company, the famed Frisco, has demonstrated its belief in the value of standardization by a long record of repeat orders for these cars.

During the ten years since the introduction of the PS-1 Standardized Box Car, the first pre-engineered, laboratory-proved and mass-produced freight car, the Frisco has purchased 3500 of these units on 10 separate occasions.

In its unrelenting efforts to provide even higher standards of railroading for the shippers and consignees along its 5,000 track miles, the Frisco relies heavily on equipment such as the PS-1 to keep costs and maintenance down, service and shipper acceptance high. The Frisco's PS-1s serve as real workhorses by meeting the challenges of weather extremes and diverse operating requirements, while carrying an infinite variety of lading.

For example, Frisco shippers and consignees include leaders in the pulp and paper, milling and glass industries to name only a few which require skillful lading handling.

Pullman-Standard has traditionally worked closely with such progressive roads as the Frisco to make certain that PS-1 Box Cars meet the needs of both railroads and shippers. And such railroad-carbuilder liaison has pointed the way toward many PS-1 improvements.

While the PS-1 is truly a standardized freight car, its carefully planned-for design flexibility has permitted inclusion of new ideas and techniques to keep pace with advancing railroad operations.

Pullman-Standard Field Service Engineers, making hundreds of critical in-service inspections each year, report on the performance of each lot of PS-1s in service. Outstanding durability features as well as areas for improvement are reported for consideration in future designs. This means that the PS-1 and other P-S Standardized Freight Cars, will continue to fill the rolling stock requirements of the progress-making railroad industry.

In addition to the PS-1 Box Car, Pullman-Standard's line of standardized freight cars includes the PS-2 Covered Hopper, PS-3 Open Top Hopper and the new PS-4 all-purpose Flat Car. Each of these cars offers railroad users the full benefits of mass-production and standardization that have prompted the railroads to specify the PS-1 as one out of every four box cars built in the last ten years.

Neither Frisco 18050's travels nor its ability to handle lading are unusual . . . being merely all in a year's work for it or any PS-1. The economical, dependable every-year-all-year performance every PS-1 turns in is the direct result of the applied carbuilding know-how of the designers, engineers, laboratory scientists, production experts, craftsmen and field service engineers dedicated to keeping Pullman-Standard the world's largest carbuilder.

BUILT TO SERVE BEST ON THE
GREAT AMERICAN RAILWAY
System
BY PULLMAN-STANDARD

WORLD'S LARGEST MANUFACTURER OF PASSENGER AND FREIGHT CARS

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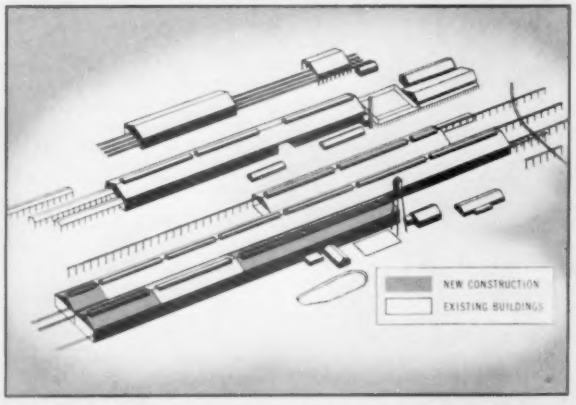
BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON

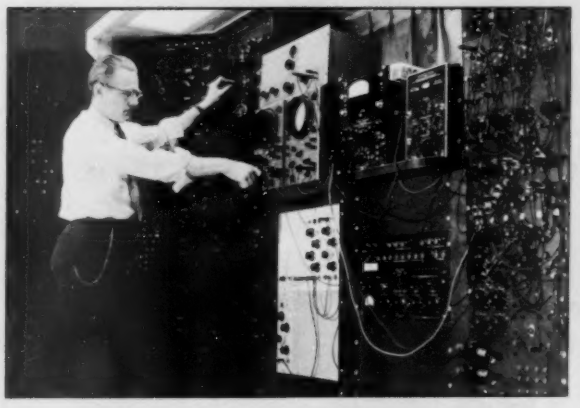
how the FRISCO's PS-1s were built

Long runs of alike freight cars, possible only through standardization, enable buyers to receive full benefit of precise and economical mass production using advanced techniques, costly dies, jigs and fixtures impractical for limited runs of custom cars. Pictured is an underframe welding positioner that insures down-hand welding precision.

Since the first PS-1 was delivered, over 150 engineering, structural, and production improvements have been made in standardized designs to keep pace with advancing railroad operating conditions. Trained P-S Field Service Engineers, making hundreds of in-service inspections each year, initiated many of these advances through factual reporting of car performance.



Pullman-Standard operates freight car plants at Hammond, Ind., Michigan City, Ind., Butler, Pa., and Bessemer, Alabama. Strategically located, these plants are constantly undergoing physical improvement for more economical and efficient production. The Bessemer Plant, above, is starting a multi-million dollar expansion program to give the railroads even better service.



With the largest Research and Development facility in the carbuilding industry Pullman-Standard tests products, materials and processes. Advanced scientific instruments and techniques prove standardized freight car designs before they are put into service. Pictured is an Analog Computor used for complex analytical calculations.

Built to serve best on the

GREAT AMERICAN RAILWAY SYSTEM

PS-1 BOX CAR

PS-4 FLAT CAR

PS-3 HOPPER CAR

PS-2 COVERED HOPPER

WORLD'S LARGEST MANUFACTURER OF PASSENGER AND FREIGHT CARS

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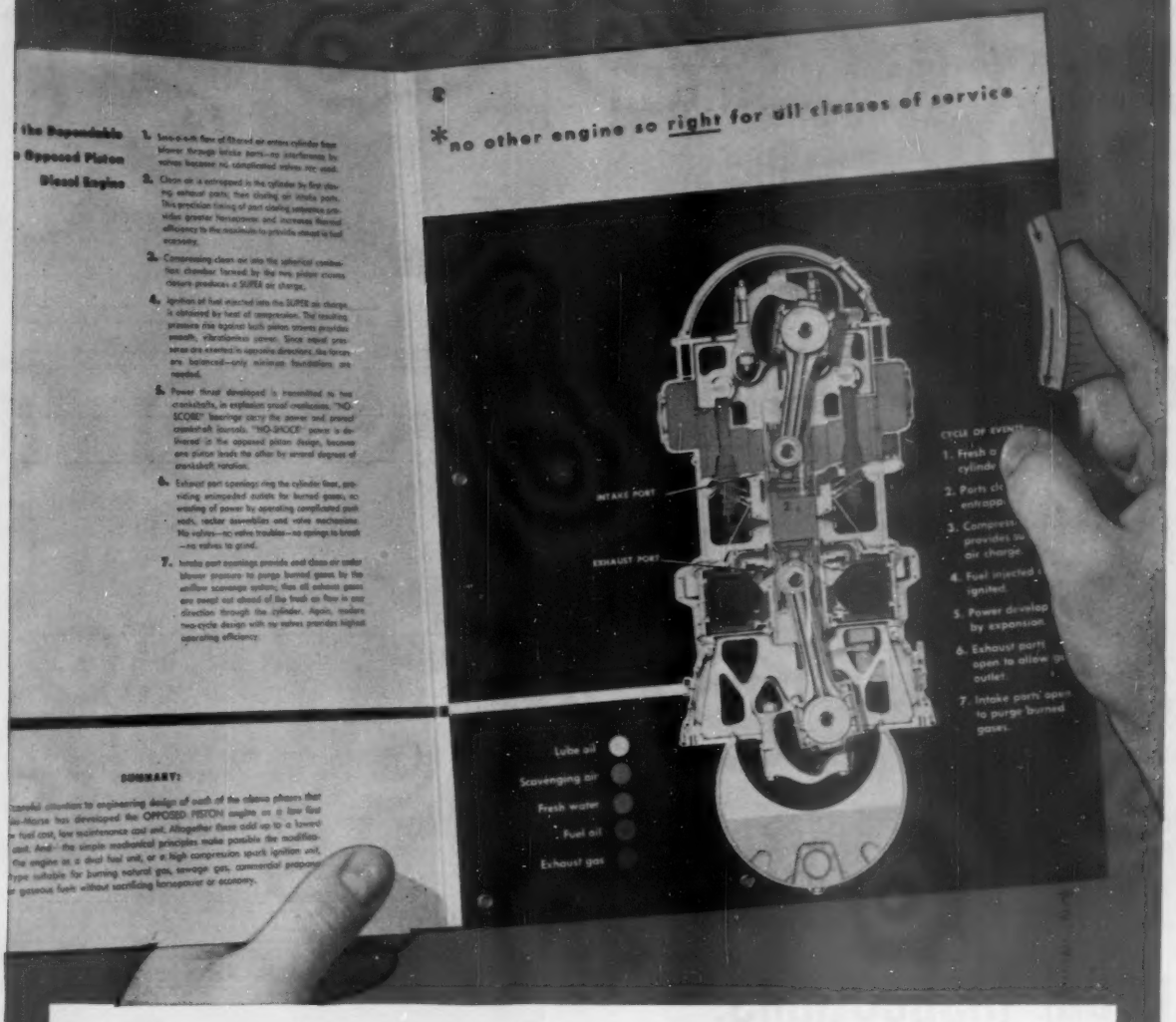

Here in Graphic Full Color is a detailed working model of the Fairbanks-Morse Opposed-Piston Diesel Engine—and it's yours free for the asking.

With the 8-inch operating cutaway in front of you, you can follow the complete operating cycle of this outstandingly successful heavy-duty engine designed for continuous service. Moving the disc at the right operates the model showing exact position of pistons, and color codes condition in the cylinder, throughout the entire cycle of events.

You'll also see the simplicity of the O-P that has no valves, intricate valve trains, cylinder heads and gaskets—in fact, it has 40% fewer moving—wearing—parts than any comparable engine of equal horsepower.

If you are interested in dependable power with low operating and maintenance cost, send for your working model of the O-P diesel today! Simply attach this advertisement to your letterhead (or ask for O-P "Working Model") and send to Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Illinois.

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ELECTRICAL PIONEERING

G.E.'s Static Excitation Control System for RR Locomotives Provides Smoother Locomotive Handling, Minimum Maintenance between Annual Inspections, and Greater Reliability

Ask your local G-E Apparatus sales representative for more information, or write Section 135-3, Locomotive and Car Equipment Department, Erie, Pa.

Progress Is Our Most Important Product

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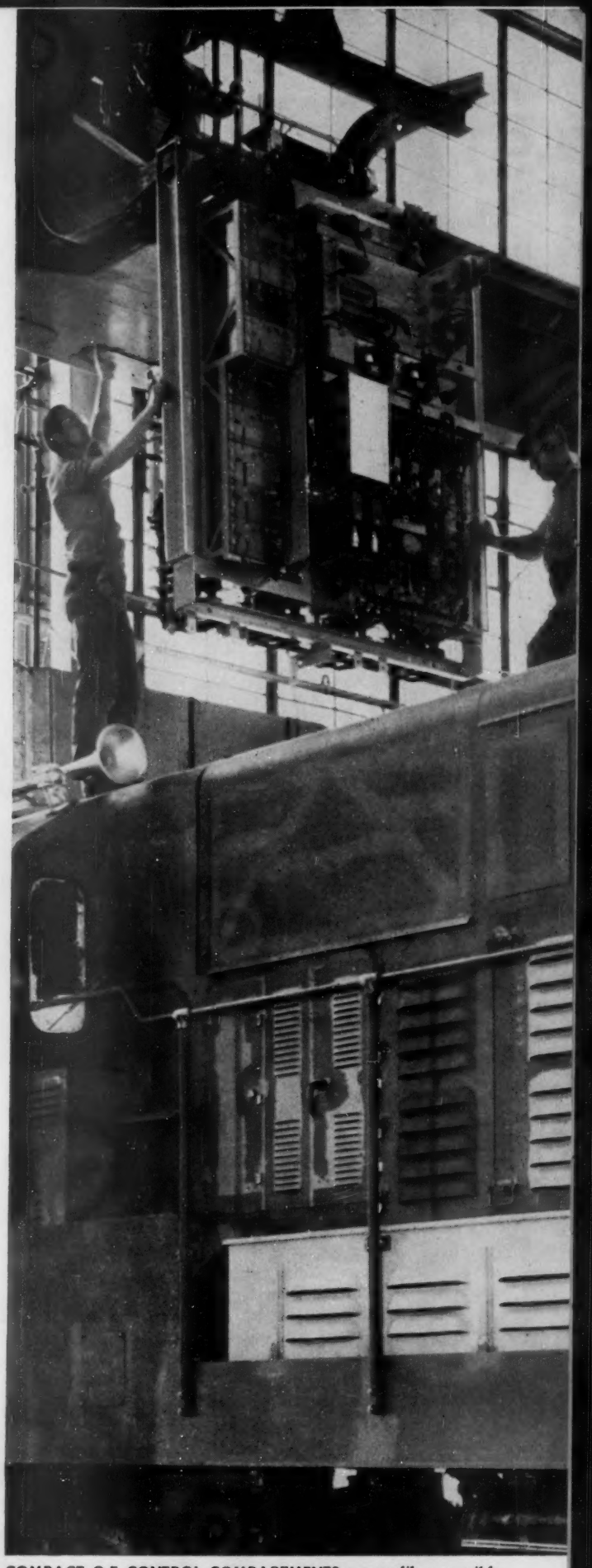
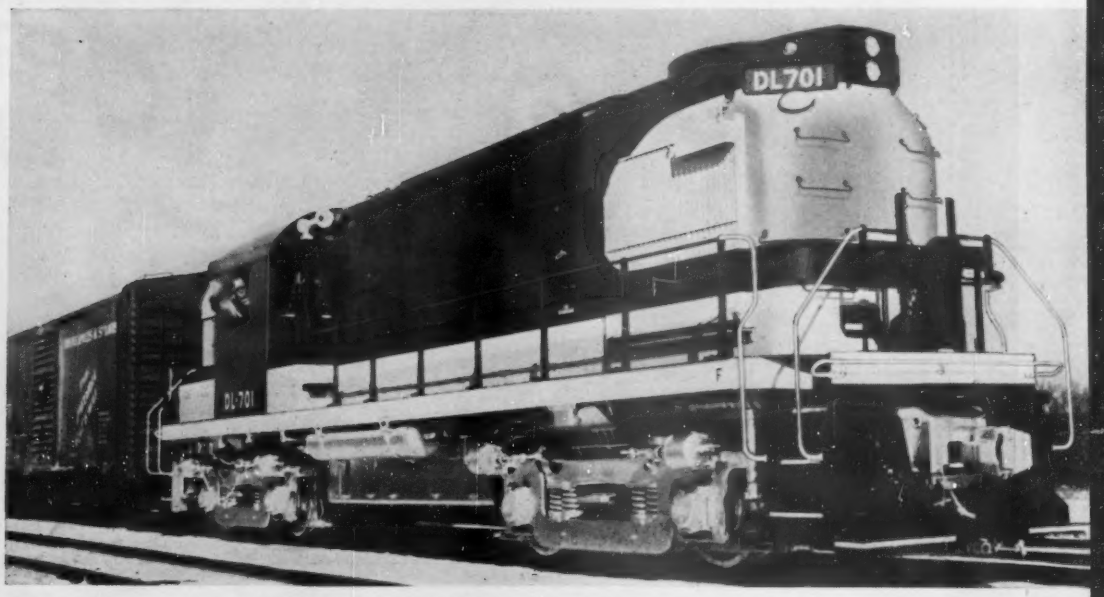


COMPACT G-E CONTROL COMPARTMENTS are readily accessible with reduced number of control devices . . . smaller components.

GENERAL ELECTRIC

SIMPLIFIED BASIC CIRCUITS and fewer contacts within the circuits help G-E control give higher locomotive reliability.

G-E CONTROL helps assure smoother locomotive handling—provides 30% higher dynamic braking effort than other equipment.



MINIMUM MAINTENANCE is required between annual inspections because G-E control has fewer moving parts.

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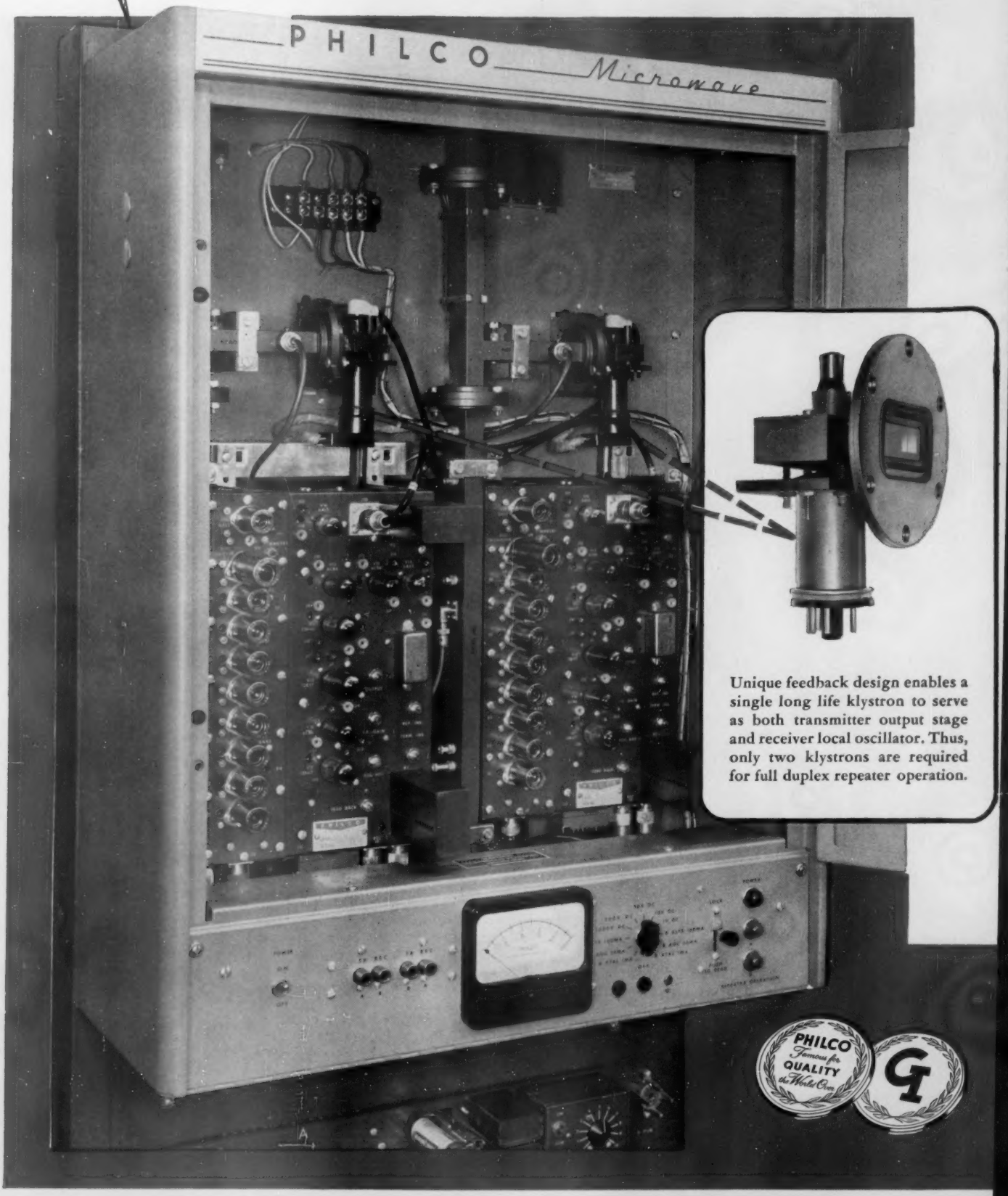

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Ten Times More Microwave Power!

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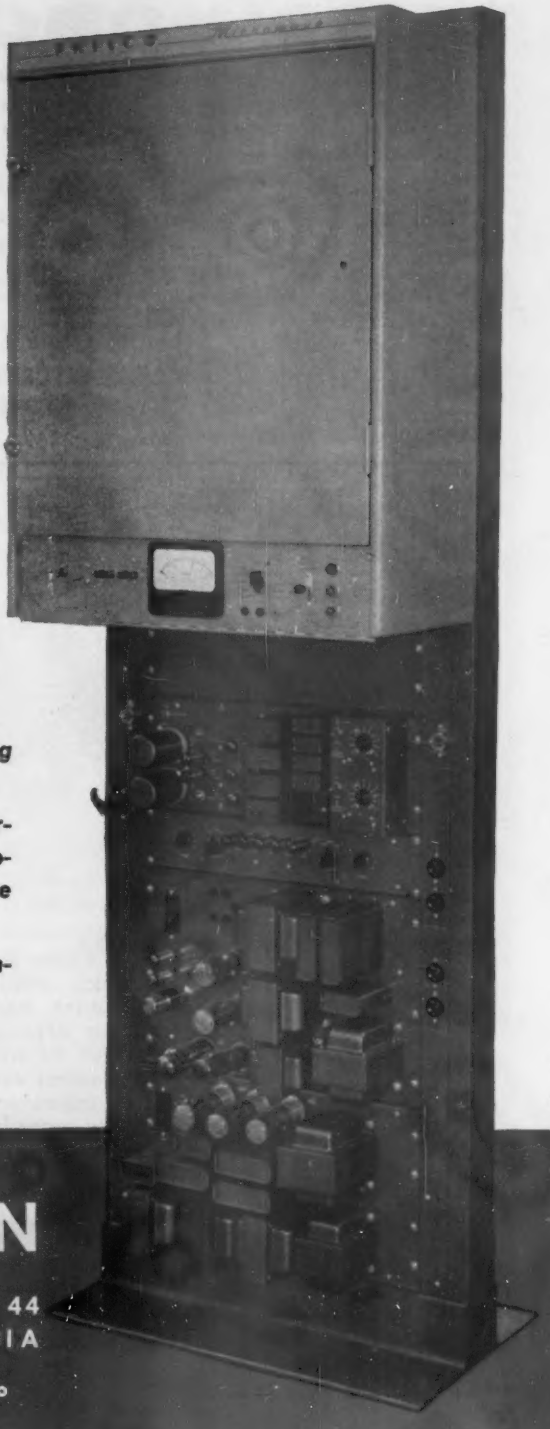
Designed specifically for reliable, long distance communications, Philco CLR-7 microwave systems provide high quality communications facilities that accommodate voice, telemetering, supervisory control, teletype, and other forms of data transmission so vital to operations.

Available as a terminal or repeater in Common Carrier, Industrial, and Government bands, Philco CLR-7 microwave provides a degree of reliability never before attained in microwave equipments.

Get complete information on Philco microwave systems. Philco maintains a staff of design, systems, and field engineers experienced and fully qualified to help plan and design your microwave communications system. Write Philco, Dept. RA today.



- ★ ***Designed for continuous unattended operation***
- ★ ***Base band available for telemetering and supervisory control . . . teletype***
- ★ ***Centralized system control from terminal stations***
- ★ ***Built in test and metering facilities***
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- ★ ***Conservatively rated components throughout***

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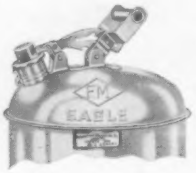
Why INDUSTRY IS BUYING THE NEW EAGLE Safety Cans

the approved SAFE way to handle flammable liquids



- A complete new line with a good old name
- Listed by Underwriters Laboratories
- Approved by Factory Mutual
- Available in 5 sizes from 1 qt. to 5 gal.
- No waste, no splash, no spill
- Strong 1-piece construction — no seams
- Self-adjusting guard cap prevents leakage
- Safe for handling all flammable liquids

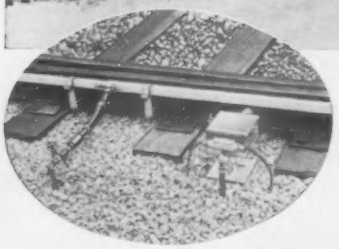
1 qt., 2 qt., 1 gal. Safety Cans come with trigger - grip handle, as illustrated at top right. 2½ and 5 gal. sizes feature free-swing handle (above)

Order from your supplier or write for information. The new Eagle 1955 catalog showing the Complete Line is now available free. Eagle products are also available in Canada.

EAGLE MANUFACTURING COMPANY
Wellsburg, W.Va.

Serving Industry Since 1894

Snow Melting by Remote Control!



White Remote Controls with White gas burning switch heaters are proving dependable and superior IN ACTUAL SERVICE. Control unit in sealed off-rail box, with igniter, tower indicator, automatic relighter. Complete cycle in a few seconds. Gas consumption adjustable for mild or heavy weather. Write for Circular 35-A

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Elkhart 7, Indiana

Financial

turn, for 4,855,190 shares of common and 2,483,990 shares of preferred, both with par value of $50 per share. The application also seeks authority for sale of 1,000,000 shares of common to key employees, pursuant to a stock option plan.

Delaware, Lackawanna & Western.—*Stock Option Plan.*—This road has applied for ICC authority to sell and transfer, from time to time in connection with its stock option plan, up to 80,000 shares of its stock. The stock would be purchased in the open market.

Dividends Declared

ALABAMA GREAT SOUTHERN.—common, $4, semiannual; 6% participating preferred, $4, semiannual; both payable June 20 to holders of record May 21.

ATCHISON, TOPEKA & SANTA FE.—5% non-cumulative preferred, $1.25, quarterly, payable August 1 to holders of record June 29.

BOSTON & ALBANY.—$2.50, payable June 30 to holders of record May 31.

CHICAGO & EASTERN ILLINOIS.—25¢, quarterly, payable June 28 to holders of record June 15.

CHICAGO GREAT WESTERN.—common, 35¢, payable July 6 to holders of record June 20; 5% preferred, 62½¢, quarterly, payable June 29 to holders of record June 20.

EAST PENNSYLVANIA.—$1.50, semiannual, payable July 17 to holders of record June 29.

ERIE.—37½¢, quarterly, payable June 29 to holders of record June 1.

ERIE & PITTSBURGH.—87½¢, quarterly, payable June 11 to holders of record May 31.

ILLINOIS CENTRAL.—87½¢, payable July 2 to holders of record June 1.

KANSAS CITY SOUTHERN.—common, 75¢, quarterly, payable June 15 to holders of record May 31; extra, 25¢, payable June 15 to holders of record May 31; 4% preferred, 50¢, quarterly, payable July 16 to holders of record June 29.

KANSAS, OKLAHOMA & GULF.—6% preferred, A, $3, semiannual; 6% non-cumulative preferred B, $3, semiannual; 6% non-cumulative preferred C, $3, semiannual; all paid June 1 to holders of record May 19.

MASSAWIPPI VALLEY.—$3, semiannual, payable August 1 to holders of record June 30.

NEW YORK, CHICAGO & ST. LOUIS.—90¢, quarterly, payable July 2 to holders of record May 25.

PHILADELPHIA & TRENTON.—$2.50, quarterly, payable July 10 to holders of record June 29.

PITTSBURGH, FT. WAYNE & CHICAGO.—common, $1.75, quarterly, payable July 2 to holders of record June 8; 7% preferred, $1.75, quarterly, payable July 3 to holders of record June 8.

PITTSFIELD & NORTH ADAMS.—$2.50, semiannual, payable July 2 to holders of record June 20.

READING.—4% 2nd preferred, 50¢, quarterly, payable July 12 to holders of record June 21.

ST. LOUIS-SAN FRANCISCO.—50¢, payable June 15 to holders of record June 1.

SOUTHERN.—new common, 50¢, initial, payable September 14 to holders of record August 15.

SOUTHERN PACIFIC.—75¢, quarterly, payable June 18 to holders of record May 28.

UNION PACIFIC.—$1.50, payable July 2 to holders of record June 4.

WARE RIVER.—$3.50, semiannual, payable July 5 to holders of record June 20.

WEST JERSEY & SEASHORE.—$1.50, semiannual, payable July 2 to holders of record June 15.

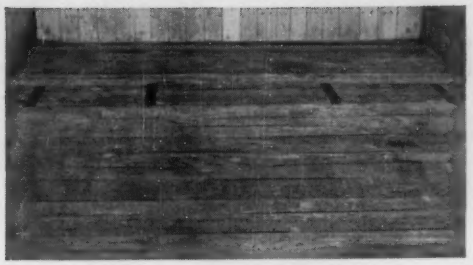
WHEELING & LAKE ERIE.—common, $1.43¾, quarterly; 4% preferred, $1, quarterly; both payable August 1 to holders of record July 13.

Upgrade any box car interior

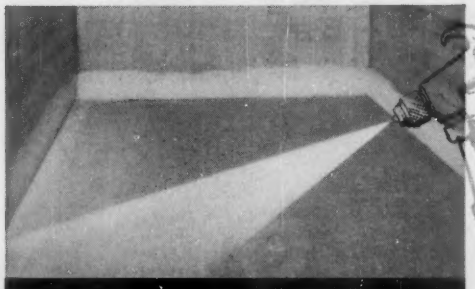
QUICKLY, ECONOMICALLY

with ARMORTEX

a tough, permanent plastic car liner



BEFORE AFTER



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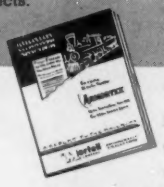
- **SMOOTH, TOUGH SURFACE—EASILY SWEPT OR WASHED OUT**
- **ADHERENT**—a mastic which bonds to surface. Not a strippable material
- **FLEXIBLE**—tough, but not brittle. ⅛" film will bend around 1" mandrel
- **SOLVENT RESISTANT**—unaffected by mineral spirits, water or gasoline. Wood color of film will not stain or discolor
- **NON-HAZARDOUS**—an oil-in-water emulsion. Presents no fire hazard in storage or application.
- **INSECT RESISTANT**—made of synthetic resin and mineral fillers—absolutely impervious to insects.



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JW Mortell COMPANY
511 BURCH STREET
KANKAKEE, ILLINOIS

Serving American Railroads Since 1895

Compare Costs, Materials and Application with Any Other Process

Here's really big news the whole railroad industry has been waiting for! Now, for the first time, it is possible to apply a quick, economical protective coating to box car floors and walls which insures the *permanent*, superior surface needed for shipment of high grade bulk commodities such as grits, flour, sugar and grain.

Armortex, an amazing new discovery of the J. W. Mortell Railroad Division, completely eliminates the costly preparation of cars for individual loadings. Internal car surfaces coated with Armortex no longer splinter or deteriorate under normal operating conditions...thus resulting in a reduction of claims due to leakage, infestations, package damage.

Still another big advantage of new Armortex is its ease of application. One man can cover a box car floor in less than 30 minutes...readying the car for service the next day. By spraying, brushing or troweling, Armortex can be applied at any shop, rip-track or siding without returning the car to a central maintenance location.

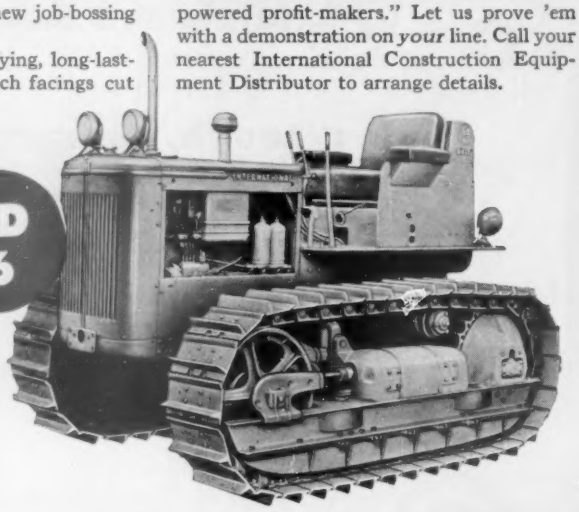
Armortex is also available in Caulking Grade for sealing in large cracks and gouged-out surfaces in lining, doorposts, etc.

ONLY NEW INTERNATIONAL®

give you bonus horsepower to speed your maintenance.

When you put a new bonus-powered International crawler on your railroad job, you can be sure of added production. Your operators save time because these tractors start *seconds-fast* with push-button in-seat ease. They ride in easily-adjusted "club-car" comfort to command exclusive new job-bossing panoramic vision.

New power-holding, heat-defying, long-lasting cerametallic engine clutch facings cut clutch release effort 50%. New booster steering cuts fatigue as much as 75%! New pressurized cooling systems are "standard"—so are new power-train and track-frame strength; and new high-efficiency seals and filters! These new crawlers are "bonus-powered profit-makers." Let us prove 'em with a demonstration on *your* line. Call your nearest International Construction Equipment Distributor to arrange details.

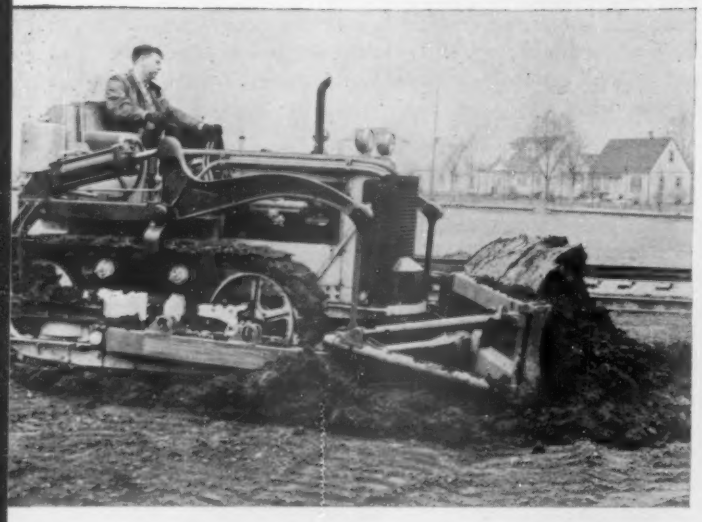


NEW TD 6

boosted 23% to 50 net, 45.5 drawbar hp (55 net, 41.5 dhp in loader models). Easy to transport, weighs only 8,890 lbs.

NEW TD 9

boosted 32% to 66 net, 54.5 drawbar hp (71 net, 60 dhp in loader models). New power is backed by new power train, stronger track frame.



Here's one of the new bonus-powered International crawlers, a TD-9, hard at work improving drainage along a spur line near Chicago. With 66 belt hp, this tractor boasts more power than any other crawler in its class. The operator puts the greater power to work easier, because he sits comfortably in a new, raised, foam-rubber, adjustable seat, handles easy-to-reach fatigue-reducing control levers. Hydraulic Bullgrader blade moves over a yard of clay per pass, readily interchanges with bulldozer or grubber blade. A wide variety of other attachments—including winches, swing cranes, rippers, fork-lifts, and Skid-Shovels—gives this tractor "versatility unlimited."

Many railroads report exceptional economy from the use of International *wheel* tractors. With six sizes to choose from, 9 to 59 drawbar hp, these units can be equipped with mowers, front-end loaders, backhoes, post-hole diggers, dozers or snow plows, and over 40 other attachments to speed maintenance work. Here, a 19 dhp Model 100 mows along the Texas and Pacific right-of-way in Bunkie, Louisiana. Roadmaster estimates each of the four "100's" used in this area mows 8 miles of 30-ft right-of-way per 8-hour shift. Fuel consumption averages 7 gallons of 26¢ gasoline per tractor per day.

CRAWLER TRACTORS

plus new design, of-way jobs

NEW TD 14

boosted to 95 net, 78.5 dhp (100 net, 83 dhp in loader models). Features better visibility, new equipment carrying and operating strength.

NEW TD 18

124 net, 103 dhp (134 net, 111 drawbar on loader models). Gives you "new look" visibility, plus operating ease never before available.

TD-24

Still leader of its class. Available in 190 dhp gear-drive, or 200 bhp torque converter models. Both boost output through instant high-low gear range, full live power on both tracks when turning.

ALL-NEW PAYHAULERS®

For hauling rock or shovel-loaded ballast on major right-of-way relocations, the all-new International Payhaulers are setting economy records. In these rear-dump haulers, now available in two sizes, 18 and 24 tons, you have greater horsepower-to-payload ratios than are available in any other off-highway trucks. You have stronger main frames for reduced maintenance costs . . . with strengths of 108 to 130 inches cubed, *50 to 100% over other trucks*. You have higher speeds, 36 to 38 mph . . . full-power hoists . . . better visibility. Investigate Payhaulers before you buy any off-highway trucks. You'll find them a worthwhile investment.

Measure . . . compare . . . prove to yourself . . . these new International machines beat all others for high-speed, low-cost maintenance-of-way work. Write us for all the facts or contact your local International Construction Equipment Distributor.

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INTERNATIONAL® Construction Equipment

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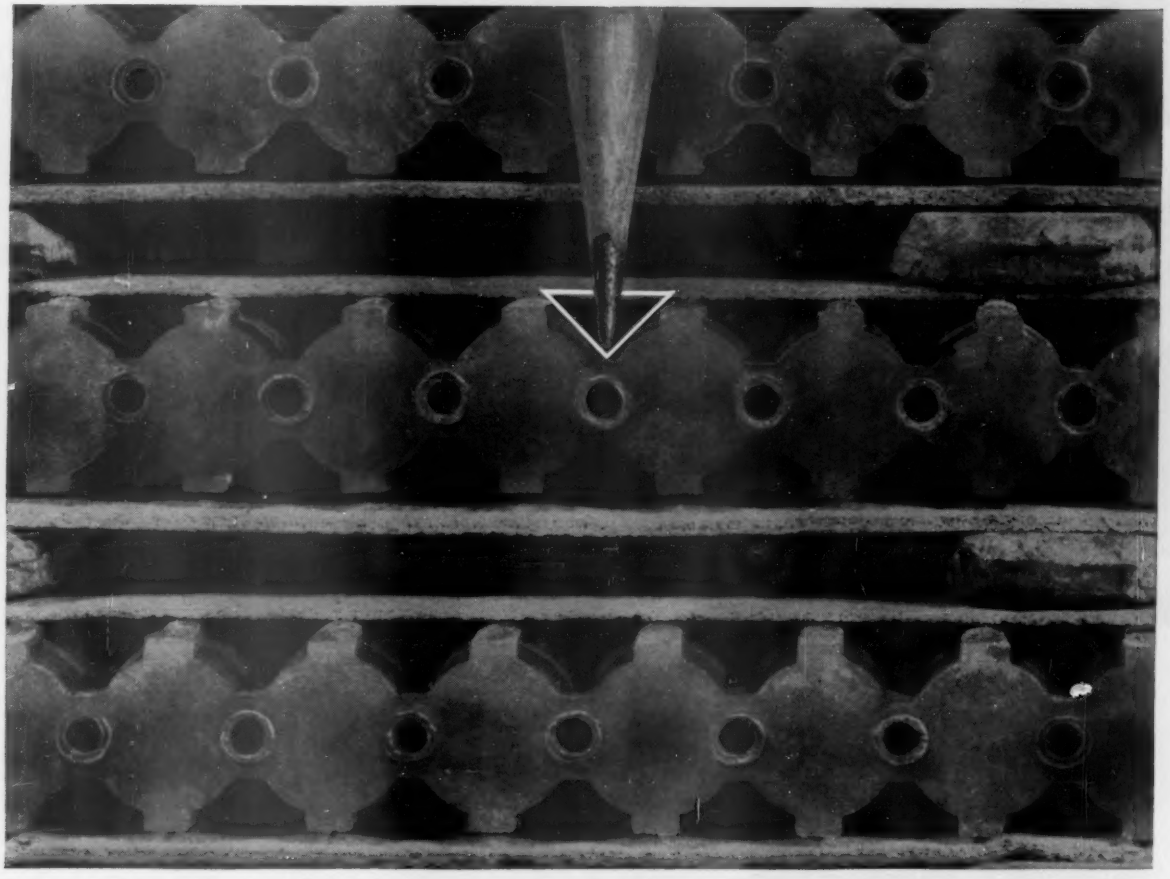
A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks

EXIDE-IRONCLAD BATTERIES

For railway car lighting and air conditioning



BOTTOM VIEW shows tubular construction of positive plates in an Exide-Ironclad Battery.

Pools of electrolyte next to plates speed heavy load response

BATTERY FOR RAILWAY CAR LIGHTING AND AIR CONDITIONING. Model EHL. Write for Bulletin No. 5168.

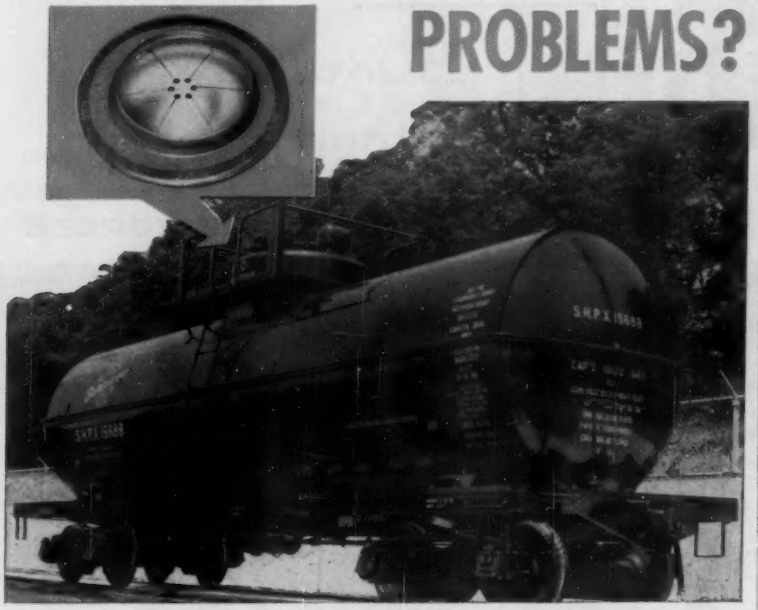
When the man at the control says "More power—fast," the positive plate in the storage battery says "More electrolyte—instantly." That's why the Exide-Ironclad Battery can meet heavy load demands so much more rapidly than other types of batteries. And it's the reason they outperform others in so many uses.

Adjacent to every positive plate in the Exide-Ironclad Battery are these triangular pools of electrolyte standing in reserve. When the call comes for power, the electrolyte is right there where it's needed for swift, sure response. There's nothing to slow down the action. Tiny slits in plastic power tubes let electrolyte in—yet prevent loss of active material. Only the Exide-Ironclad Battery has this construction.

This exclusive feature is only one of the many reasons Exide-Ironclad Batteries have proved so superior in countless applications. When you order batteries for heavy duty service, or the equipment that requires such batteries, be sure to specify Exide-Ironclad. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 2, Pa.

Exide®

TANK CAR RUPTURE DISC PROBLEMS?



Model TC Rupture Discs are used for overpressure protection on tank cars under 103-A, 103-B, 103-AW and 103-BW classifications. The car shown above was built by American Car & Foundry Division of ACF Industries, Incorporated, and is owned by Shipper's Car Line Division of the same company. Lessee is Niagara Alkali Company.

New BS&B Model TC Rupture Disc Will Not Corrode Or Fatigue While Car Is In Transit!

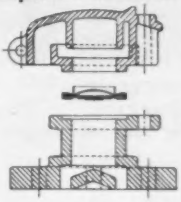
Here's a new Tank Car Disc by BS&B which meets the demand for a serviceable disc that *will not corrode or fatigue* while the car is in transit!

Engineered and manufactured by the nation's leading and oldest manufacturer of rupture discs and related equipment, the Model TC prevents unnecessary product loss and lowers maintenance costs for tank car shippers. Ladings reach their destination safely and without delays.

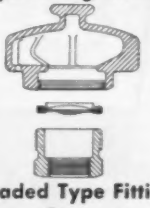
Adaptable to either standard bolted or threaded type tank car fittings, Model TC is thoroughly tested and proved through service by tank car builders and chemical shippers.

Available in 30 psig. and 45 psig. relief pressures. Assembly into tank car fittings conforms to sketches shown at right. Discs are furnished for tank car fittings of any design. For more information, address your inquiry to...

Adaptable To Either...



Standard Bolted Type Fitting Or...



Threaded Type Fitting

BLACK, SIVALLS & BRYSON, INC.
Safety Head Division, Dept. 2-FC6
7500 East 12th Street, Kansas City 26, Mo.

Supply Trade

Merwin H. Dick, western editor of Railway Age and editor of Railway Track and Structures, has been elected a vice-president of the **Simmons-Boardman Publishing Corporation,** his assignment being that of chief engineering editor of the company's railway publications. His headquarters will continue to be, as heretofore, in Chicago. **Joe W. Kizzia,** transportation editor, has been promoted to western editor of Railway Age, also with headquarters in Chicago. Mr. Dick is an engineering graduate of the University of Kansas and learned his railroading on the Santa Fe. He has been on the editorial staff of Railway Age and affiliated papers since 1929. Mr. Kizzia is a graduate in journalism from Northwestern University and is the former editor of a weekly newspaper in Arkansas. He got his practical railroad training with a railway operating batallion in Europe during World War II. He has been a member of Railway Age's editorial staff since 1949.

Merwin H. Dick

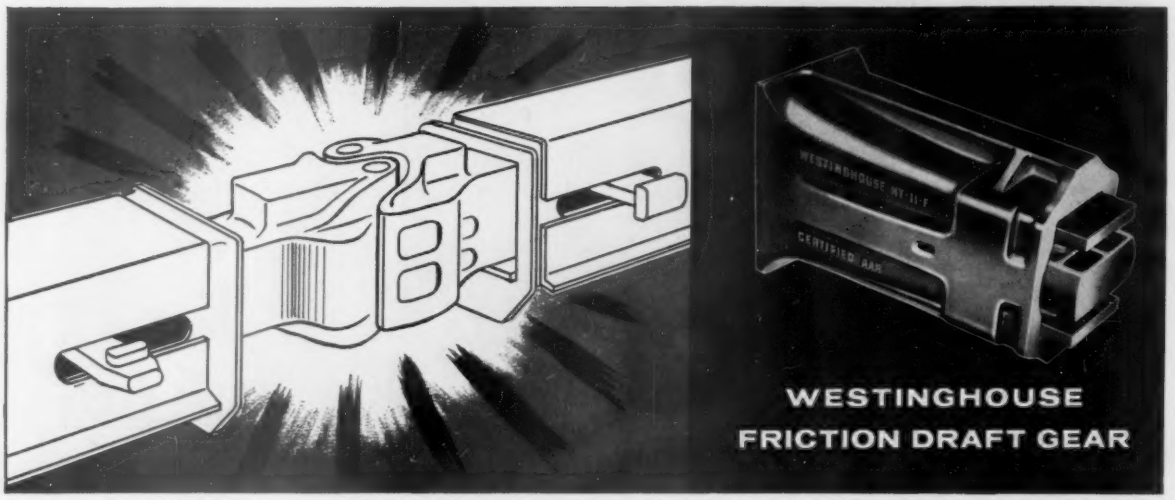
Joe W. Kizzia

Rail Joint Company has announced the following changes in personnel: **E. A. Condit,** chairman of the board; **Alex Chapman,** vice-

(Continued on page 52)

Friction + Cushions! Absorbs! Dissipates!

DESTRUCTIVE FORCES



You can't beat fundamentals! Within itself, a good friction draft gear sets up a yielding resistance to shocks, builds up this resistance as shocks are intensified. It does this with characteristically high absorption and low reaction.

That's how the Westinghouse *Friction* Draft Gear *absorbs* the forces between colliding cars; *equalizes* the speed of coupled, moving cars as slack is run in and out, or as brakes are applied; allows serial action as long trains are started. Thus, by cushioning these otherwise destructive forces, the Westinghouse *Friction* Draft Gear protects rigging and car structure, cuts costly lading damage claims.

This is the time-tested principle of the Westinghouse *Friction* Draft Gear.

Cardwell Westinghouse Co.
332 S. Michigan Ave., Chicago 4, Illinois
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Specify
CARDWELL
WESTINGHOUSE

The Engineer's Report

CASE HISTORY
RPM Delo Oil R.R.
LUBRICANT

Western Pacific R.R. Co.,
FIRM

Special oil maintains high average mileage record!

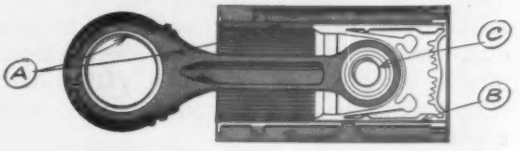
1776 CYLINDER ASSEMBLIES make up the 111 diesels in road freight service on the Western Pacific R.R. These units, as well as all passenger locomotives on the line, are lubricated with RPM DELO Oil R.R. Maintenance records of several years on freight locomotives show following average actual miles on parts removed for any reason: wristpins and bushings, 413,675 miles; pistons, 376,018 miles; liners, 354,101 miles. A representative assembly is shown in insert, just as it appeared after 476,497 actual freight miles. Note cleanliness of parts and free rings—typical of Western Pacific's experience with RPM DELO Oil R.R., the standard on the line since 1949.

FOR MORE INFORMATION about petroleum products of any kind or the name of your distributor, write or call any of the companies listed below.

RPM DELO LUBRICATING OILS

TRADEMARK "RPM DELO" REG. U. S. PAT. OFF.

How RPM DELO Oil R.R. prevents wear, corrosion, oxidation

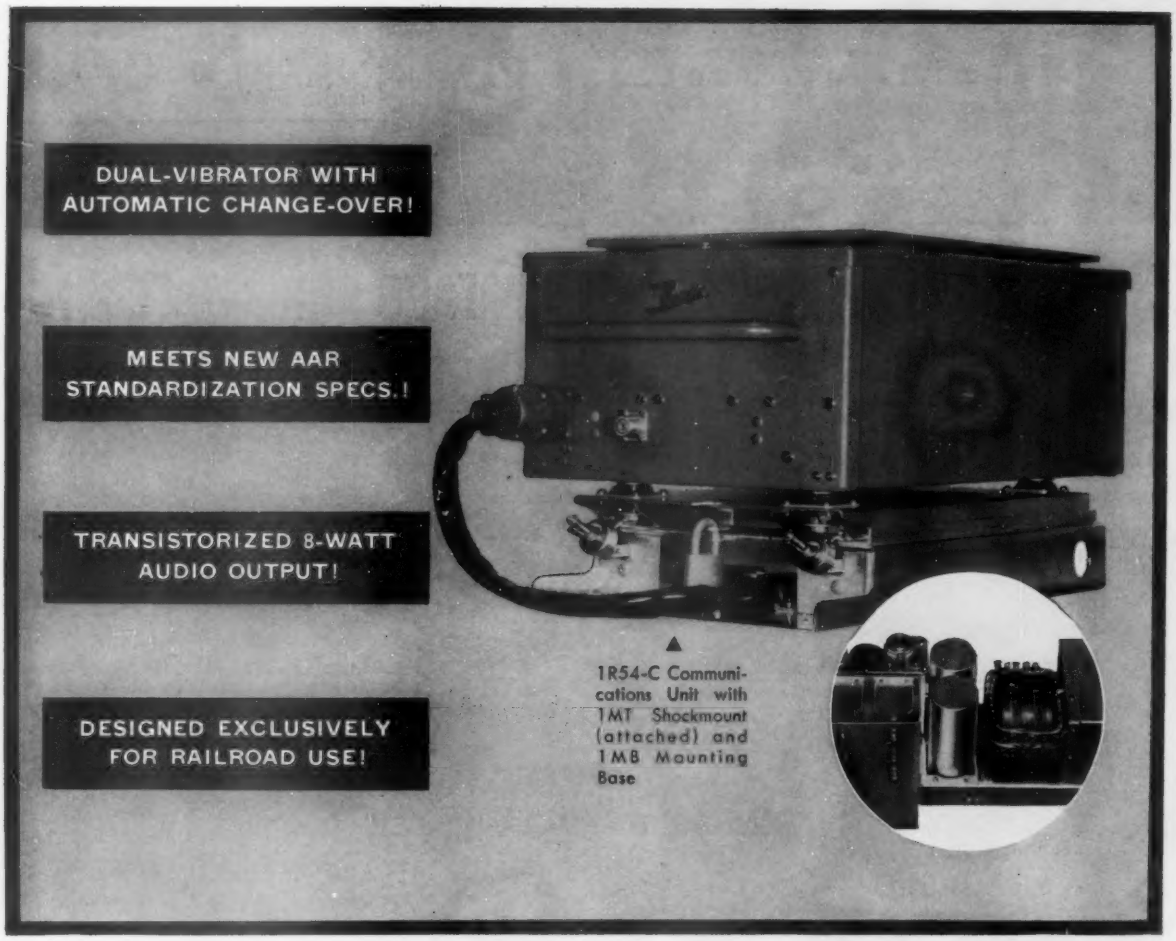


A. Special additive provides metal-adhesion qualities...keeps oil on parts whether hot or cold, running or idle.

B. Anti-oxidant resists deterioration of oil and formation of lacquer...prevents ring-sticking. Detergent keeps parts clean...helps prevent scuffing of cylinder walls.

C. Special compounds stop corrosion of any bushing or bearing metals and foaming in crankcase.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado


DUAL-VIBRATOR WITH AUTOMATIC CHANGE-OVER!
MEETS NEW AAR STANDARDIZATION SPECS.!
TRANSISTORIZED 8-WATT AUDIO OUTPUT!
DESIGNED EXCLUSIVELY FOR RAILROAD USE!

1R54-C Communications Unit with 1MT Shockmount (attached) and 1MB Mounting Base

Another Bendix first! Dual-Vibrator 64-Volt single package communications unit

The all-new Bendix 1R54-C . . . the only 64-Volt Communications Unit combining receiver, transmitter and dual-vibrator power supply in one compact case. Operates directly from the locomotive 64 VDC battery supply with automatic change-over to stand-by vibrator—no converter needed.

New transistorized audio circuit doubles audio output while keeping power drain at a minimum, affording heat reduction and improved efficiency.

A completely new, "railroad engineered" communications unit, the 1R54-C is available with a full line of AAR "standardized" accessory units. Write today for further details. Address: Bendix Radio, Railroad Sales, Baltimore 4, Maryland.

*Reg. U. S. Pat. Off.

Bendix* features that assure top performance, long life

- Dual-Vibrator—automatic change-over
- Improved vibrator circuits
- Class "B" push-pull transistorized audio output
- Interchangeable with previous Bendix 64-Volt equipment (with connector-adapter)
- Encapsulated selenium rectifiers
- New metal-clad resistors
- All components rated for 100°C

Chicago Sales Office: 188 W. Randolph St., Chicago 1, Ill.
West Coast Sales: 10500 Magnolia Blvd., N. Hollywood, Calif.
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Canadian Distributor: Aviation Electric, Ltd., 200 Laurentian Blvd., Montreal, Quebec.

Bendix Radio

DIVISION OF BENDIX AVIATION CORPORATION

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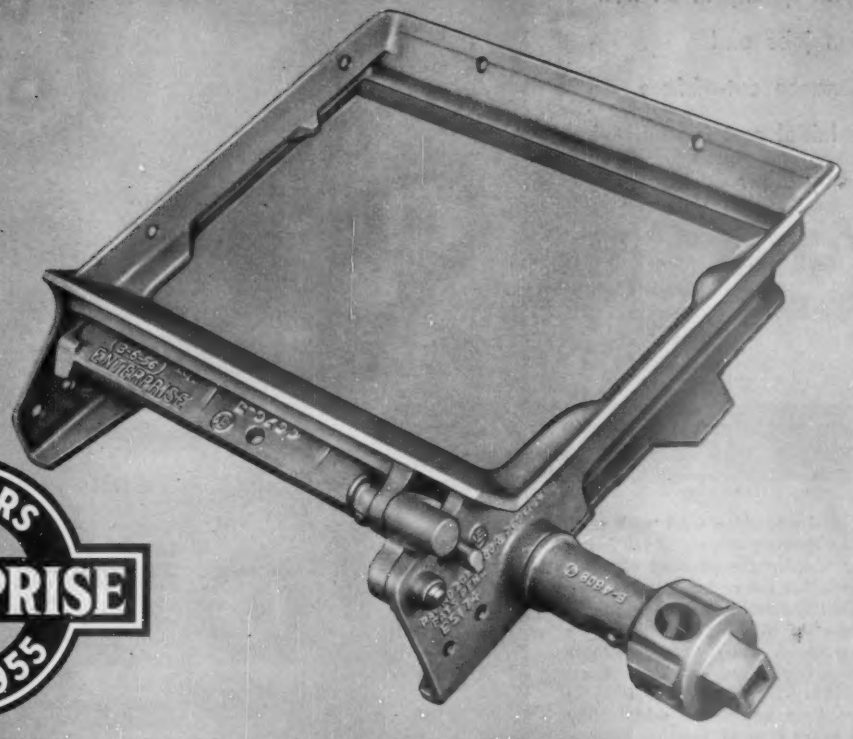

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1905-1955

ENTERPRISE RAILWAY EQUIPMENT COMPANY

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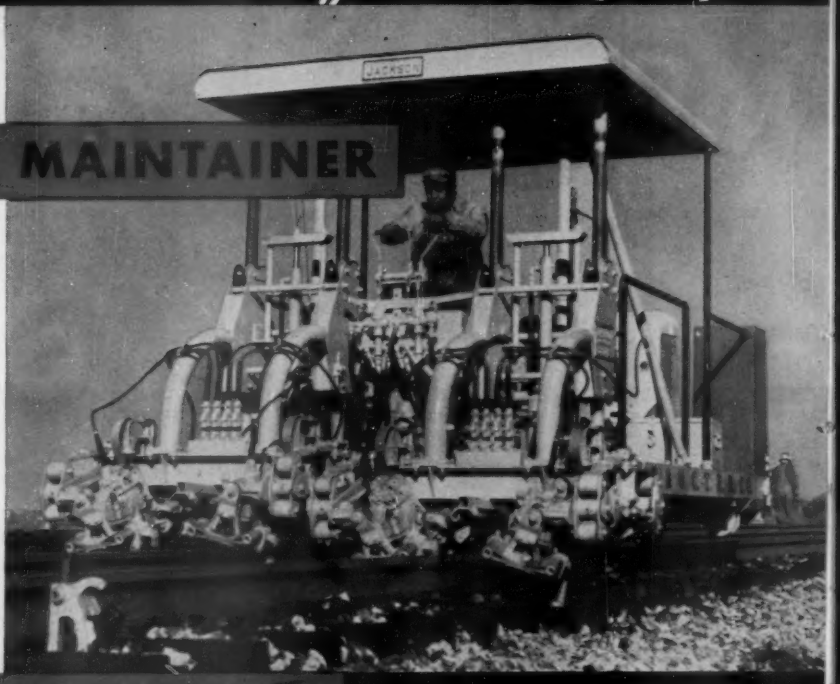


JACKSON TRACK MAINTAINER

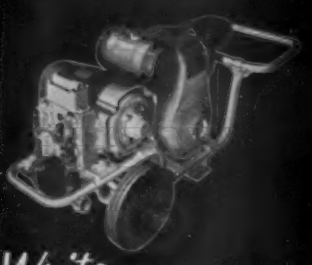
For BOTH — *putting* up and *maintaining* finest quality track UNDER ALL CONDITIONS — this is demonstrably the finest machine ever devised. Let us prove it to you.

JACKSON MULTIPLE TAMPER

Unsurpassed for putting up track of finest uniform quality in all new ballast insertion jobs and regular maintenance out-of-face lifts of track. Initial cost is far less than any other on-track tamper.

JACKSON MANUALLY GUIDED TAMPERS

Ideal for low lift and smoothing work with small gangs using 2 and 4 tampers with a Jackson Power Plant. Perfect for tamping the portions of crossings and cross-overs that the on-track tampers do not reach. Excellent for major ballasting operations since any number of these outfits can be grouped for the purpose. Fitted with adjustable handles for maximum convenience of all operators. Available with quickly interchangeable tamping blades which give them unmatched adaptability and efficiency on every type of tamping job.



Power Plant generates both single and 3-phase 115 V., 60 Cy., AC, is exceedingly reliable and, in addition to serving 1 to 4 tampers, may be used for emergency signaling, lighting and operating other power tools.

Tamper has 8" adjustment range to suit convenience of all operators.

Write WIRE OR PHONE FOR COMPLETE INFORMATION

JACKSON VIBRATORS INC., • ELECTRIC TAMPER & EQUIPMENT CO., Ludington, Michigan

Do Railroads Need Improved Associations?

There is a good deal of discussion going on about the most effective places to do some of the jobs (e.g., economic and technological research, and some public relations functions) which are important to the successful performance of the railroads.

Some of this work can best be done by the individual railroads (or, at least, by the larger ones). Some of it ideally fits the pattern of the regional associations—and a great deal of it, beyond question, affects all the railroads in such a uniform manner that it can be performed most economically by the national organization.

Until there is a more comprehensive and logical assignment of some "collective activities" than now obtains, two costly deficiencies may persist—(1) duplication of effort and the danger of friction which arises when two bodies seek to occupy the same space, and (2) the likelihood that some vitally important jobs may be lost in the shuffle, and fail to be done at all.

There are too many people who still tend to look upon the Association of American Railroads and the regional railroad associations as not essentially dissimilar to the "trade associations" which exist in other industries—organizations which, while useful, are by no means indispensable. The run-of-mine trade associations usually serve as trading posts for "know how" information; and as rallying points for an industry's political self-defense. The regional and national railroad associations, of course, serve these purposes, too—but they must and do go far beyond them, because of the peculiar nature of the railroad business.

Associations Indispensable

The oil, chemical and steel companies could still operate if there were no communication whatever between them—but the railroads could not provide the kind of nationwide transportation they do provide, in the absence of the collaboration they practice through their regional and national organizations. Standardization of gage and equipment and some uniformity in accounting require close intercompany cooperation, and such collaboration is indispensable to permit interchange of traffic without transshipment. The AAR and the regional railroad associations are, therefore, not merely useful adjuncts to the railroad business—they are integral and essential parts of it, without which (in some form or another) the railroads could not offer nationwide service.

Outside the railroads, the closest analogy to the Association of American Railroads that can be found anywhere lies in the American Telephone & Telegraph Co. The big difference between the AAR and AT&T, of course, comes from the fact that AT&T owns or controls its constituent companies, whereas—in the case of the railroads—it is the constituent companies which control the AAR. The essential independence of the constituent companies will naturally limit the AAR's authority in the kind of "staff work" it does for the railroad industry—but the logical division of labor between the individual constituent companies and the nationwide industry organization is certainly closely similar in the railroad and telephone businesses.

U.S. Once Had This Problem

There is another analogy which should be helpful in understanding the railroad's problem of effective organization—that is, the different situation of the government of the United States under the Articles of Confederation from that which came about after the adoption of the Constitution. Under the Articles, there were a lot of necessary activities that were just not done—a situation which was corrected when a clear decision was reached as to exactly what the constituent states wanted the national government to do; and when they gave the national government its definite assignment of functions, with powers to match its responsibilities.

It is an indisputable fact that there are some areas of railroad industry research that have not been adequately probed. The jobs are not being done because they are too big (or the benefits are too widespread and not patentable) to be practicable for individual companies; and because association activities in these areas have not been authorized or assigned. There are, similarly, educational projects that ought to be undertaken for the industry's great benefit—which are being overlooked because they are too big for individual companies and are beyond the assigned duties of any of the railroad associations.

There are important public relations and "contact" areas which may not be definitely allocated—and tend to be overlooked, while in some assignments there may be unprofitable duplication of effort.

The foregoing observations are not made in any fault-finding spirit. The defects in railroad organization are the defects which invariably arise in any situation where there is a deep commitment to democratic principles. On the other hand, the democratic nations have proved their ability to organize themselves for effective defense of their right to survive. The democratically organized railroads can unquestionably achieve a similar degree of improvement in the efficiency of their industry organizations, provided they can appreciate the urgent need for such action.

The competitive situation in transportation being what it is—the railroads just cannot afford to be satisfied, in any aspect of their functioning, with less than the best performance of which they are capable.

C&O Thinks of Tomorrow . . . Today

The independent consulting status of the railroad's research department brings it into contact with present and anticipated operating and traffic problems — Cooperates closely with manufacturers

Delivery of Pullman-Standard's "Train X" found the Chesapeake & Ohio's research department more than casually interested. Through its early stages "Train X" was a C&O project. C&O research had done much engineering groundwork when Pullman-Standard began to work on this lightweight train design.

The organization which did the preliminary work on "Train X" was started in 1944 by the Chesapeake & Ohio, Pere Marquette, and Nickel Plate railroads. K. A. Browne was appointed research consultant at that time.

In this job Mr. Browne was to "inaugurate, conduct and direct studies and activities in general and specific fields of research related to the operation of these railroads."

The three roads at that time were closely allied. The aim was to separate the research functions from the operating groups and to divorce the new department from everyday routine. The Nickel Plate was separated from the C&O family in 1948, and the Pere Marquette was completely absorbed. Today this research department is solely a C&O operation. Its growth was gradual. It is now staffed by 19 people—14 with technical training.

Although the functions of the department are not limited, it generally has been concerned with rolling stock projects. It is entirely separate from the test department and does not do any routine testing or inspection.

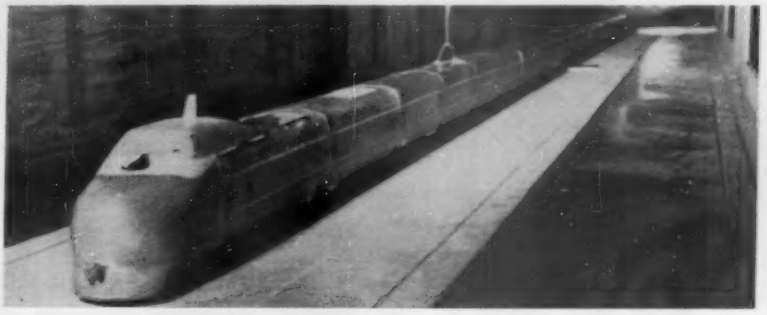
Projects are either initiated by the management, or result from the natural interests of department personnel.

Passenger Research

For the first five years nearly all C&O research was concerned with passenger equipment. During this

K. A. BROWNE, C&O research consultant, brought a background of research and development in the aircraft field when he came to the C&O from Wright Aeronautical Corporation in 1944.

SHOP operated by the research department has the men and equipment for producing a wide variety of mechanical devices which evolve from the research projects. "Railvans" were built here.



"TRAIN X" wind tunnel test was part of C&O development work. The project progressed through cooperative road tests with Pullman-Standard using an experimental coach operating on the Pere Marquette district.

SUSPENSION of the "Railvan," called the keystone of this development, is accompanied by specially designed couplers and structural provision for transmission of buffing loads allowing trailer train operation.

time the C&O was in the process of re-equipping all of its trains with modernized, or lightweight, streamline passenger cars. A development of industry-wide significance during this period was the sleeping car layout for bedrooms and roomettes which has since become Pullman-Standard's regular arrangement. These "Type S" accommodations were C&O designed, and their location in the cars was also planned by the research group. The use of a convector panel around the floor heaters in C&O sleepers was the result of another research project.

The road's postwar streamliners, the "Pere Marquettes," developed unsatisfactory riding qualities at low mileages. In an attempt to extend wheel life and lengthen the periods between shoppings, the research department conducted an extended series of tests intended to determine the cause of truck "shimmy." It was found that shock absorbers which prevented constant rotary movement of the truck about its center plate would do much to correct this situation.

The eventual result of this work has been the large center bearing developed by the General Steel Castings Company.

"Train X"

After the introduction of the "Talgo" trains, C&O began to work on the "Train X" project, which incorporated features of "Talgo" with others originated on the C&O. The aim was reduction of passenger train operating costs to about one-half those of conventional trains. Design work was completed in 1950. After this, Pullman-Standard's research and development groups undertook the building and testing which was finally completed in the spring of 1954.

The road testing was done on the Pere Marquette district of the C&O, and was done by C&O and Pullman engineers. The entire development has been the basis for the two low-slung, lightweight trains for the New York Central and New Haven.

After 1949 most C&O research efforts were directed to the improvement of freight equipment. The department has devoted a great deal of time to studies of the forces that act on freight cars and on freight car lading in transit and while being switched.

In 1950 the AAR conducted freight car truck tests on the Illinois Central. Working cooperatively with the AAR, and taking advantage of the controlled conditions existing during these tests, the C&O research group determined the sources of all the vibrations that developed in these cars.

Freight Problems

The truck suspension system was found to be responsible for the low frequency vibrations. In addition, however, higher frequency vibrations were found, and these developed in major structural members. It was established that although vibration and accelerations might originate from components other than the truck suspension, maximum accelerations and forces were pro-

duced by resonance of the truck spring system.

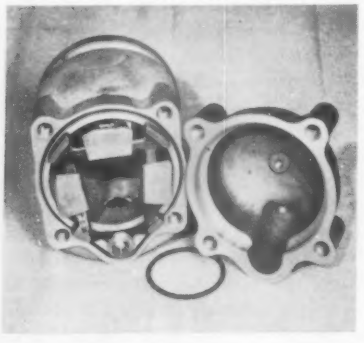
Loading methods were the subject of research done cooperatively with the Signode Steel Strapping Company on Signode's test track in Chicago during 1954. The problem was an investigation of the methods for bracing a load in a box car.

Tried during the test were seven methods of handling a heavy package with a low center of gravity. Restraint for this lading varied from a reliance on only the friction between the load and the floor, through various strapping methods, to solid blocking with snubbers.

Effective Bracing

Using these various restraining methods, the car was run down the test ramp to obtain measurements of the forces developed when the car contacted a second car standing at the bottom of the ramp. The conclusion was that the "longitudinal restraining method employed should allow the package to move relative to the car; the amount of movement allowable to be as great as practical. If possible, longitudinal restraint should not be placed solely below the center of gravity of the package—it should be braced so that it does not tilt."

C&O has since employed these concepts in a series of coil-steel handling gondolas. The arrangement has proved popular with shippers and is widely used on a growing number of railroads.



JOURNAL BEARING project now under way has produced two designs. Second type under development is shown. This is for integral box application and the three-pad thrust bearing requires a non-standard axle.

One of C&O's major causes for train delays and an item of constant equipment maintenance expense has been the standard journal bearing and its lubricating system. The C&O has designed two types of package bearings which attempt to combine the simplicity and low initial cost of plain bearings with the maintenance and performance results the road has obtained with its roller bearing cars.

Tests during development work showed that the thrust or lateral load rather than the main vertical load is the chief cause of wear in standard bearings. This was the most severe limitation in the design of the new bearings. Both are of the sleeve type with roller lubrication enclosed in a cartridge that fits the integral side frame.

The first design can be used with standard axles and has undergone considerable road testing. The second design requires a special axle but can be applied through the front of the integral journal box with a few alterations to the box itself. Road tests are now under way on this design.

Research and "Railvan"

Recently announced is a C&O research development which it is thought may some day bring about a departure from presently accepted methods of freight movement. This is a highway trailer equipped with a dual wheel system making it possible to operate over highways on rubber tires and over rails on flanged wheels. A hinged arrangement makes it possible to swing the necessary wheel set to the running surface while the other set is retracted.

The prototype vehicle embodying these principles was described in Railway Age, May 14, p. 47. The C&O has built two of these vans and is testing them on both rail and road.

Work on many of these major projects has stretched over several years, and most of them are not worked on continuously. Some have gone to a point where there was no apparent solution—and then have progressed only after there has been further development and evolution in the field. Many ideas are developed with the understanding that there can be no immediate application, but with the knowledge that there will be available a background of engineering and test data.

Staff members are assigned fields of interest, and keep abreast of them by attending technical meetings and visiting facilities which incorporate new developments. Some projects have been shelved because no interest was displayed by the operating group concerned, or because of changes in C&O policy. The research group acts only in a consulting capacity for the operating departments.

Local Problems

Frequently the department has been called upon for workable solutions to specific local problems. One such project was the work done at Newport News, Va., to prevent degradation of coal handled over C&O piers and into ships. The solution was a coal height control apparatus which has worked successfully. As is the case with any research department, not all projects have ended successfully. Typical of other projects was work done with the redesign of locomotive mufflers, and some equipment tried on the boats in the Lake Michigan car ferry service.

These were poor substitutes for existing equipment. At the present time the department is studying removal of moisture from locomotive compressed air systems.

The C&O research department operates a drafting room and a shop. There is space for laboratory testing of mechanical equipment. Available is instrumentation for both laboratory and road tests. There can be theoretical and practical approaches to projects of almost any nature. The C&O has frequently taken advantage of opportunities for cooperative work with outside organizations, and has taken steps to keep up with technological developments that do or may have railroad application. The C&O is looking to the future—and is doing something about it.

Big Opportunity: Super Railroads

. . . Says John W. Barriger

Report spells out industry's strengths and charts a course for the future—based on upgrading properties to top quality and promoting traffic

NEW BOOK: "Super Railroads for a Dynamic American Economy," by John W. Barriger. Published by Simmons-Boardman Publishing Corporation, 30 Church Street, New York 7. Bound in strong paper.

PRICES: Single copy, $2; 10 copies, $17.50—postpaid. Further reductions on larger quantities, ranging down to $1 a copy (f.o.b.) for 200 copies or more.

The vital and significant physical and economic characteristics of the railroad industry—both as they are now and as they ought to be—have been conveniently assembled and outlined by John Barriger in a compact book of some 100 two-columned pages, including many instructive tables. Probably no other book, since L. F. Loree's "Railroad Freight Transportation" appeared in 1922, has come along with so much professionally important information for all railroad men who have a serious interest in their work.

The book is in essence a job of stock-taking. It deals with tangible things—plant, equipment, methods—not with theories. It assays railroad plant and performance, the good with the bad; and then, still adhering to tangible data, indicates the most likely path to great improvement.

Here today is the railroad industry, doing on the whole a creditable job of hauling half (but a declining ratio) of the nation's freight traffic. Railroad efficiency has been greatly improved in the years since the war—largely through dieselization—but the rate of improvement (and reflection of the improvement in competitive rates) has not been fast enough to prevent continued traffic erosion.

Nobody can be a pessimist about the future of the railroads if he surveys the evidence as John Barriger has marshalled and presented it. The big need is that all people who can act in the railroads' behalf should be thoroughly familiar with this evidence. Otherwise they can scarcely be expected to govern their actions so as to profit from the opportunities which are plainly available.

The railroads in 1953 performed 600 billion net ton-miles of freight service on 225,000 route-miles. If this traffic had been spread out evenly over all the route-miles in the country, the daily net tons per mile of road would have been only 7,500—or no more than two tolerably well-loaded freight trains in each direction could have handled.

Thus it is evident that the unused capacity of the American railroads is a figure of astronomical size. This unused capacity represents colossal economic waste—as harmful to the public interest as it is to that of the railroads. As the author points out, it is capacity and not use that occasions a very large part of railroad expense. Relatively economical as railroad service is today—if the railroads were used to anywhere near their capacity, their unit costs would shrink to microscopic size, in comparison with the costs of their principal rivals.

But present skimpy ton-mileage is not evenly distributed over all railroad route-mileage. As a matter of fact, 50 per cent of the ton-miles are concentrated on 10 per cent of the route-mileage. A further 60 per cent of the total mileage carries 43 per cent of the ton-mileage. And 30 per cent of the mileage carries only 2 per cent of the traffic.

The outstanding present characteristic of the railroads—which they must strive systematically to improve in order to assure their future growth and prosperity—is this: **So small a proportion of total railroad service is performed under the best available conditions of**

If "super-markets" can sell better merchandise at a lower price than a lot of little retail shops can—and if super-highways can speed up motor vehicles and reduce operating costs—then thoroughly up-to-date railroads can certainly produce better transportation at a lower price than underdeveloped railroads can.

Most railroads present the paradox of the ultra-modern (motive power, for example) operating alongside other property of the vintage of 1900 (e.g., grades and curvature or yard lay-out). And super-railroads will come into existence to the degree that steps are taken to make a larger and larger ratio of railroad plant and practice as good as the best.

Such super-railroads would benefit everybody. Shippers and consumers would get lower transportation costs. Additional traffic, drawn to the railroads by improved service and attractive rates, would bring greatly increased earnings. Better earnings would induce the new investment needed for further improvements to plant and equipment. And, of course, a prosperous and growing railroad industry would provide more and better jobs for railroad men; and a far better market for suppliers.

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full use of modern plant and equipment. Even the most up-to-date railroads have some divisions or some terminals which are decidedly substandard; or they operate some trains that are heavy losers. And these below-standard conditions penalize the operations of high efficiency.

Railroad rates tend to take the form of averages—that is, they average the costs of old-style "retail" railroading with railroading performed under fully up-to-date conditions. **This kind of pricing makes the railroads vulnerable to competition**—even where railroad costs are lower than those of their rivals.

Railroads do not provide really economical transportation (i.e., not nearly as economical as they can produce) unless a high percentage of capacity is used. If a freight train has 35 cars, you can add 35 more cars with only a microscopic increase in expense—and the operating cost per ton-mile hauled drops almost 50 per cent when those 35 cars are added.

Unused Capacity

If a line of average traffic density has only a couple of fairly well loaded freight trains in each direction daily, then that number of trains could easily be tripled with no increase whatever in investment in roadway, with little increase in maintenance of way expense, and with little increase in supervision or clerical expense. In other words, average total costs per ton-mile would be greatly reduced if traffic on that line were tripled.

The more traffic you have, the lower your unit costs, and vice-versa. This "spiral" is a fortunate one, if traffic is growing—but it is just as disadvantageous when it becomes a "reverse spiral" with a traffic decline.

As Mr. Barriger points out, if the public is going to get the advantage of the best and most economical service of which the railroads are capable, then two things are necessary: (1) the railroads must be allowed to compete for all the traffic that they can handle profitably and (2) the railroads must invest the money, just as fast as their credit or earnings permit, to make all their facilities (equipment, communications, grades and curves, yards) as efficient as the best.

Doubtless, if the public's imagination could be aroused to the advantage to *them* of super-railroads—such as the foregoing two steps would provide—then the railroads would quickly get the regulatory "climate" they need to accomplish these things. As Mr. Barriger puts it: **"The most serious aspect of the railroad problem is the public's inadequate knowledge of what it has lost and is losing right now by not having the best railway transportation which modern engineering can provide."**

Which comes first, the chicken or the egg? Do you first arouse the enthusiasm of the public over the advantages to them of greater rate-making freedom for the railroads—or do you, first, get the understanding enthusiasm of railroad men themselves for such a program? And, if railroad people were to appreciate fully the tremendous potentials of the industry in this situation, isn't there a great deal they could and would do to improve, economize, and realistically re-rate their competitive services—even in advance of an awakening by the public and the regulatory authorities as to the public's selfish interest in such a program?

Most businesses, when they want to increase the sales of their product, first endeavor to awaken the understanding and enthusiasm of their own people—as a necessary and logical first step in their ultimate goal of arousing the enthusiasm of their patrons. Here, then, is the picture Mr. Barriger portrays for his railway audience:

"It is easy to visualize an ideal railroad—what might be called a 'super-railroad'. The maximum potential of modern engineering would minimize the obstacles of grades and curves and friction which nature places in the path of transportation. Permanent way and structures, tracks, signals, and communication facilities would become representative of the highest available standards.

"Trains would be composed of cars and locomotives that could incorporate the full potential of such a plant in terms of load and speed.

Lower Unit Costs

"Yards and terminals would be redesigned and equipped to minimize the time and expense now required by the essential functions which they perform. Shops and auxiliary services would be similarly improved. Railroads might then be expected to provide greatly improved service at much lower unit cost, both in terms of operating expenses and investment charges, through the intensive utilization that would follow the widespread acceptance of this new era of rail transportation.

"Railroads are confronted by the rivalry of fully modernized plant facilities in other fields of transport—as evidenced by the toll road programs and the St. Lawrence Waterway. Super-railroads alone can meet such competition successfully and generate the volume of traffic essential to protect and re-establish the earning power of present investment—while providing a satisfactory return on the $20,000,000,000 additional that, in the writer's opinion, will be required to effect the transformation. This is an immense sum, but the resultant gains in traffic and earning power would easily justify and support this expenditure."

Now, what is the inherent economy of railroad service—as compared to that of other agencies of transportation? Says Mr. Barriger:

"The average direct expense of moving freight on all of the railway lines of America, including the least profitable branches, is 2 mills per ton-mile; or one-tenth of the direct cost of highway service. **It is obvious that it is not the cost characteristics of road-haul transpor-**

"Elimination of all passenger trains would probably shrink revenues more than it would reduce expenses. It is misleading to attribute a 'deficit' to a particular service which exceeds the reduction in expenses which could be made by discontinuing the service."

tation that explains the diversion of traffic from the rails to the highways.

"Many truckers concentrate their attention upon traffic which in terms of relative costs should use the mass, or wholesale, transportation services of the railroads. Such highway carriers also avoid, as far as possible, the less profitable 'retail' responsibilities of providing service at small stations—a neglect which necessarily leaves this costly duty to their completely regulated railroad competitors. In this way, true comparative transport economies are concealed and railroads and trucks, in all too many instances, are each performing the work which the other could do at less cost.

"With the opportunity to compete pricewise, railroads could attract large quantities of petroleum traffic, notwithstanding the vast mileage of pipelines. *The improved economy of super-railroads would not enable them to replace existing pipelines, but would put them forward as an economical alternative for pipelines not yet built.*"

In his critical scrutiny of railroad plant and equipment, the author is at his best. He takes up railroad property class by class and indicates what is needed to bring the whole plant up to acceptable modern standards, viz., grade and curvature, roadway and track; bridges and tunnels (not many big new bridges needed, but a lot of tunnels); signals and communications and track patterns; terminal modernization (with real estate development to provide much of the needed financing); locomotives, cars, and shops; miscellaneous facilities. Here are a few of his more pointed observations:

"Diesel operation made obsolete the yards, train schedules and frequencies, and schemes of 'prior classification' which were built up around steam operation.

"Diesel motive power has made the 'hot-box' a critical problem. The friction journal bearing must be made more dependable or else the roller bearing must be substituted for it.

"There are 16 million journal bearings on the freight cars moving over the American railways. 'Hot-boxes', even if they occur in inconsiderable proportion to total car-mileage, still constitute a great many car failures on line. All such failures are expensive or dangerous.

"The carriers no longer have to rebuild their railroads to accommodate engines of 6,000 horsepower.

"However, the superiority of diesel operation under any set of fixed conditions should not obscure the further advantages which improved grades and curves will give the new motive power. Diesels do not lessen the force of gravity or the resistances of curves and journal bearings.

"The decline in passenger traffic is one of the railroads' principal problems. **Recovery of freight traffic through super-railroads could easily make railway passenger service (in coaches) cheaper and faster than travel by highway between all principal cities."**

All in all, John Barriger has provided a convenient body of information and inspiration, which, if widely read in the railroad industry, could easily banish all inclinations to defeatism and set the sights for the industry's progress upward and onward. **The technological and economic predominance of railroad transportation was never more firmly established than it is today. All that is needed is leadership (outside as well as inside the railroads) to induce human behavior to adapt itself to, and take advantage of, the favorable economic and technological trends which are already in existence.** The only serious railroad problems are those involving human behavior, inside the industry as well as "outside." The first necessary step in changing human behavior is knowledge of the pertinent facts. John Barriger's book provides this information.

WANT ANSWERS TO THESE QUESTIONS? ...THEY'RE IN "SUPER RAILROADS"

- **How does the direct cost per ton-mile of a well loaded freight train compare with the direct cost per ton-mile of truck transportation?**
- **What is the average daily density of freight traffic on the route-mileage of U.S. railroads? What would be the effect on costs, earnings and rates if this density were increased 50 per cent?**
- **If the railroads should abandon 30 per cent of their present route-miles (i.e., the lines with the thinnest traffic) how much would their total ton-mileage suffer?**
- **When traffic declines, is it possible to reduce expenses in proportion to revenue?**
- **Dieselization has given the railroads modern power, but what effect has dieselization had on the relative modernity of yards, signals and track lay-outs?**
- **Should railroads base competitive rates on "average" costs or on actual costs of moving the particular traffic subject to competition?**
- **How much revenue are the railroads losing per annum because the proportion of the nation's freight traffic they are hauling has fallen from 65.9 per cent in 1947 to about 50 per cent today?**
- **How does the efficiency of water-level transportation by railroad compare with that of vessels on inland waterways?**
- **Has the diesel—providing great power without heavy loading per axle—ended the need for easier grades and curves?**
- **If you have a program that you want to "sell" to the American public, what's the best way of going about it? Should you go directly to the public with your story or would it be better, first, to thoroughly inform officers and supervisors and railroad people generally about the basic merits of the program?**

PROBLEM:

How to Make Signals Function

SOLUTIONS:

- Reliable electric path between wheels
- Clean wheel treads
- Modern improved track circuits
- Reasonable sanding practices
- Auxiliary circuits, if required

By GEORGE W. BAUGHMAN
Vice-President
Union Switch & Signal Division of
Westinghouse Air Brake Company

Many railroad signal engineers have been placed at a disadvantage recently, because, in too many instances, they were not made aware of the characteristics of the new lightweight vehicles or trains which affect the operation of signal systems.

Competition is keen between the builders of these trains and, therefore, they are reluctant to release design information at an early date. Only recently have some of these characteristics been made available. In the meantime, lacking the necessary information, signal engineers were not able to state positively that all of the new trains would operate the signal systems satisfactorily.

A basic element of modern signal systems is the track circuit, which continuously detects the presence of a train. The track circuit, in its simplest form, is an electrical circuit which includes the rails as the main electrical conductors. The detection is dependent upon the train producing a low resistance electrical connection from one rail through the wheels and axles of the train to the other rail, a situation commonly referred to as "shunting" the rails.

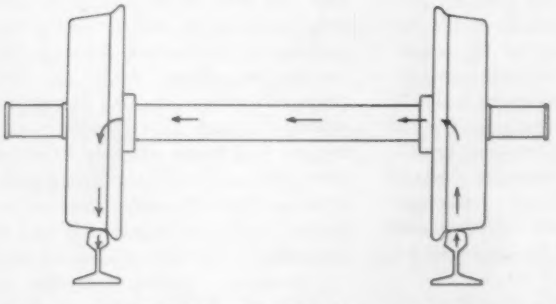
The value of this electrical resistance has been considered so important that a standard minimum value has been assigned by the AAR Signal Section. A track circuit is considered satisfactory if it detects (i.e., is shunted by) a resistance of 0.06 ohm connected from one rail to the other. This value was established as result of long experience with conventional types of railway vehicles.

In conventional construction, the two wheels of each pair are pressed on one axle, so that there is a direct low-resistance electrical path from one rail through the wheel, the axle and the other wheel, to the other rail.

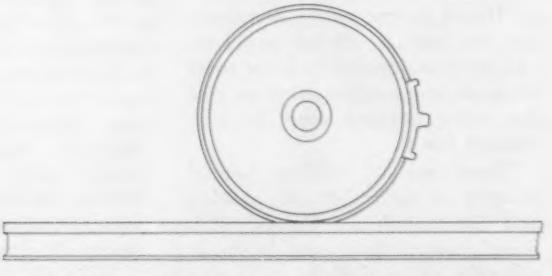
If a type of construction is used in which the two wheels of a pair are not pressed on the same axle, it is necessary to resort to slip rings, brushes and jumpers to form a low resistance path from one wheel to the other.

Clean Tread Is Important

The electrical resistance from one rail to the other, through the wheels and axle, includes the contact resistance between each wheel and the rail. Therefore, a clean wheel tread is important in securing the low resistance path required. The conven-



WITH TWO WHEELS PRESSED on one axle there is a direct low resistance electrical path from one rail to the other.



THE BRAKE SHOE CLEANS the wheel tread which contributes to the low resistance of the shunt path between rails.

with Lightweight Trains

tional brake shoe, operating on the tread of the wheel, performs this function adequately.

The need for keeping wheel treads clean has been demonstrated in actual service with single-unit self-propelled cars, using "off tread" brakes. Because of the irregularities experienced in the shunting of track circuits, one manufacturer is furnishing cleaning shoes for the express purpose of keeping the wheel treads clean. Each shoe presses against the wheel tread continuously, with a force adjusted to approximately 30 lb.

Of no direct concern here, but of educational value, is the fact that the conventional brake shoe on the tread of a wheel has a coefficient of friction which is less at high train speeds than at low. Advocates of the "off-tread" brake point to one of its features — the relatively uniform coefficient of friction with respect to train speed. Research and development have been directed to a brake shoe material, suitable for use against the wheel tread in the usual manner, which has uniform characteristics as to coefficient of friction at various speeds. Brake shoes with these characteristics, made by two manufacturers, are now in service on new trains and, according to reports, are giving satisfactory service.

Sand, an Enemy of Signaling

Sand is an insulator, and, therefore, can interfere with the good electrical contact between the wheel and the rail necessary to shunt track circuits. Sanding is a potential enemy of signaling, therefore, and should be used to the least extent possible. Methods should be employed which place the minimum required amount of sand on the rail, and thus protect against all wheels being insulated from the rails. Some roads have adopted a rule that a train must advance a predetermined distance and make a second stop, following any stop that employs sand. This is done with the thought that the train will "run off" the sand which otherwise might insulate it from the rails.

Particularly with the new self-propelled cars, using off-tread brakes, there has been a tendency in recent years to use sand quite generously for both accelerating and braking. An important fact is that clean wheel treads (cleaned by brake shoes) contribute to a minimum requirement for sand, whether the required adhesion is for acceleration or braking. Experience shows that it is practicable to operate lightweight trains, of the types now in use in main-line service, with little or no change in modern signal systems, under these conditions:

1. The two wheels of each pair are pressed on the same axle;
2. Wheel treads are kept clean;
3. Provision is made to minimize the amount of sand used, and to avoid stopping on sand; and
4. Modern practices are employed to improve operation of track circuits.

If these basic principles of good shunting have not been observed, it will quite likely be necessary to resort to other methods for securing dependable signal performance.

Track circuit shunting may be intermittent, particularly with single-unit trains operated at high speeds. However, the fact that the shunt may be lost for a short interval does not necessarily mean that the track circuit is near the point where it will fail to shunt entirely. For such conditions there is being used successfully a repeater of the track relay having the characteristics of quick release and slow pick-up. A relay with a pick-up of approximately one second is effective for taking care of momentary loss of shunt. Other methods are also available.

An important result is obtained from using a rather high resistance in series with the track relay. This contributes to a favorable time constant, and thus permits the track relay to release faster than if no resistance were used.

These improvements for track circuits in automatic signaling territory can be used for the track circuits in interlockings. There should be even greater effort to provide safe track circuit operation in interlockings.

A favorable factor for interlocking track circuits is that they are relatively short, and the various shunting factors improve as the

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The Author

George W. Baughman, a graduate of Ohio State University with an EE degree, went to work for Union Switch & Signal in 1923 in development work in automatic train control, coded track circuits and centralized traffic control. In 1944 he was appointed assistant chief engineer in charge of electronics, a year later was promoted to chief engineer. He was appointed vice-president in charge of engineering in 1952.

His article is based upon many years of experience and study in this field, and includes the work and observations of many people on the railroads and in the signal companies. No claim is made to originality of the material. It is a composite of what is considered to be the best and most practical information available on the subject.

length decreases. For example, a track circuit in the order of 100 ft long can be arranged so it will shunt much more readily than a conventional circuit a few thousand feet long. For obstinate shunting difficulties, there are the high-voltage coded track circuits with decoding circuits incorporating delay times to take care of momentary loss of shunt.

To Break Through Rail Film

For many years, the ohmic shunting sensitivity was considered as the best method for comparing the shunting characteristics of track circuits. Then it became known that a film developed on the rail even though it might carry considerable traffic.

This rail film is believed to be somewhat more of a problem now than it was when steam locomotives were in general use. There is an appreciable percentage of oil in the samples of film which have been removed from rails and analyzed. This may be due, at least in part, to the use of various types of flange oilers. Shunting troubles have been experienced with single-unit, self-propelled cars and diesel switcher locomotives to a greater extent than have been reported with other vehicles or trains.

A voltage somewhat higher than regularly used on track circuits may be required to puncture the rail film, in order that the track relay will release properly when these single-unit trains are involved. It is desirable to have a reasonably large amount of current to flow, following the puncturing of the film. This may be visualized as a burning action to maintain electrical contact, or it may be considered that the film has the characteristics of a semiconductor, and exhibits a continuously decreasing resistance as the current flow increases. Both these factors point to the desirability of a high voltage for the source of the track circuit energy, and a low limiting resistance between the source of energy and the track.

If the construction of the rolling stock is such that none of these improvements in track circuits is effective in securing proper shunting, the next resort is to supplement track circuits with additional equipment or systems of protection.

If only a few "problem" vehicles are involved in operations with numerous other trains on extended signaled mileage, the solution should be sought on the vehicles. However, if the "problem" vehicles are relatively numerous, and their operations are confined to short distances, perhaps the solution should be sought in connection with wayside apparatus. Basic principles only will be discussed here, more complete details being given in the June Railway Signaling & Communications.

Changes on the Vehicle

Let us explore what is available for installation on the vehicles to improve the shunting. It has been established that a wheel-to-rail voltage is effective in the electrical puncturing of the film between the two surfaces. The more adverse the film, the higher is the voltage required. These basic principles were developed and applied with some measure of success in the early 1930's, and are now being revived for application to the vehicles. The arrangement consists of a vehicle-carried source of electrical power, applying a voltage across the wheel to rail contact. The breaking down of film by this auxiliary circuit provides a low resistance path for the track circuit current and thus is an aid in shunting.

If such an auxiliary device is used it should be with the realization that:

1. Since the current from the auxiliary source will flow through the track circuit, the magnitude and frequency of the current should be selected so there will be no adverse effect on any of the regular functions of the track circuit (or cab signaling if used). With more and more functions being handled by circuits using the track rails, great care must be exercised in such decisions.

2. The scheme is basically on the open circuit principle. If an open develops in the circuit, the protection is lost. In such an instance provision must be made to protect the train in some other way.

There is a variation of this same basic principle, which consists of a wayside application of the auxiliary voltage. An example might be a d-c track circuit where fundamental improvements had been applied but something more was required to puncture the wheel and rail films. This could be on a branch line where, because of light traffic, an adverse film condition exists.

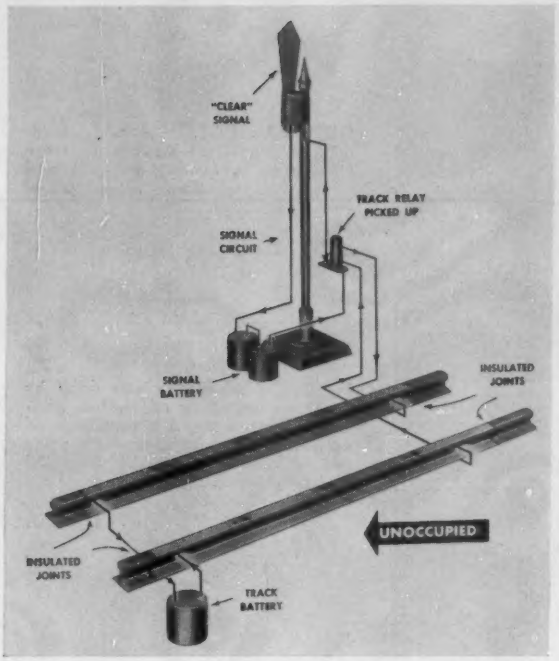
Since the track circuit here is d-c, we may apply a "film puncturing" a-c voltage at either or both ends of the track circuit. Detailed consideration would be required in any instance to arrange the circuit to approach as nearly as practicable to a fail-safe and self-checking arrangement, and so the auxiliary voltage would not affect the safety of the track circuit apparatus adversely.

Further Help for Track Circuit

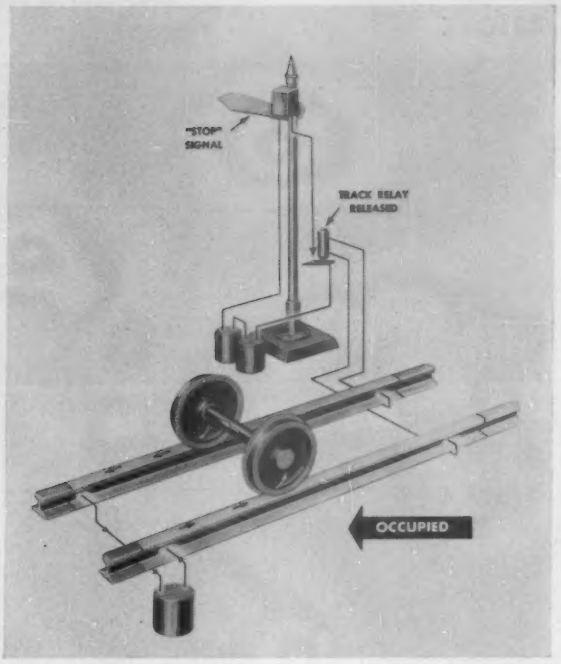
Suppose none of these procedures is effective, and something further is required to obtain reliable operation. Because of its satisfactory performance through the years, and because of its performance of other functions in addition to the detection of trains, great efforts should be exerted in the direction of supplementing rather than replacing the track circuit.

There are situations where a shunt may be obtained promptly but may not be retained reliably. Where the shunt is merely intermittent the solution may be, as mentioned previously, the insertion of a time delay in picking up the track relay. But assume a more difficult case, such as a train with a locomotive that shunts well but the shunting by the

"The electrical resistance from one rail to the other, through the wheels and axle, includes the contact resistance between each wheel and the rail. Therefore, a clean wheel tread is important in securing the low resistance path required."



IN AN UNOCCUPIED TRACK circuit, current flows through the rail between the battery and the relay.



IN AN OCCUPIED TRACK circuit, current flows in the rails as far as the wheels but not to the relay.

cars cannot be relied upon. In this instance, the track relay can be arranged so that once it releases, it cannot be picked up again until the rear of the train passes out of the circuit at the exit end.

This scheme may be considered as the first approach to the check-in check-out type of system. The shunting of the circuit is the check-in. The check-out is obtained by the cooperation of a device on the rear of the train and a wayside device at the exit end of the circuit. This scheme may appear quite simple but it must be realized that although it may be made reliable as far as safety is concerned, under the condition specified, there will be some sacrifice in flexibility of operation.

The Last Resort

There are plans to run trains with a diesel locomotive at each end. This indicates that each end of the train will provide a satisfactory shunt. Although the cars may not provide a reliable shunt, there would not appear to be need for any special consideration in straight automatic signal territory. But special consideration should be given to interlockings or other locations with relatively short track circuits, because one or more track circuits might be occupied by cars only and no locomotive. In this instance a solution may be found in appropriate modification of track circuits.

In the most adverse possible situation, the vehicle could not be depended upon to shunt the track circuit. It then is necessary to provide another method for detection. The method may be:

1. A special short track circuit with high voltage and shunt current. A track circuit in the order of 100 ft long can be arranged so it will shunt much more readily than conventional circuits a few thousand feet in length.

2. A magnetic or inductive device that would be responsive to the wheels or some other portion of the train.

3. A mechanical treadle which is depressed by some portion of the wheel of a passing vehicle. A contact operated by the treadle would be opened by the passing train, and this would release the track relay.

4. A light or radio beam responsive device.

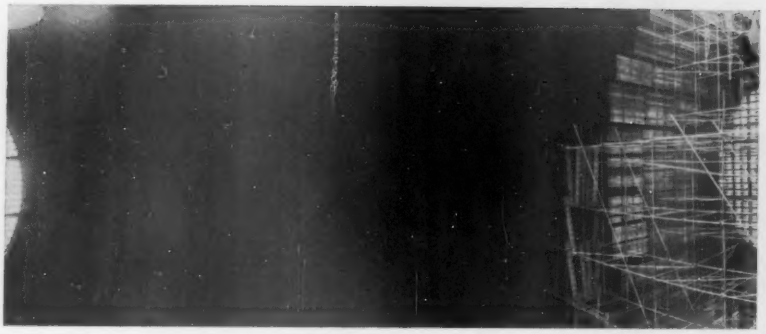
After the train has "checked-in," the track relay remains in its released position until the train has checked out of the particular circuit. The "check-out" may be through cooperation of a device on the rear of the train with a wayside device at the exit end of the circuit.

Count-In and Count-Out

Another basic principle that has been applied to the solution of this problem is known as "count-in-count-out." It may be visualized as replacing a track circuit. As the train passes a preselected point the signal displays stop, and a counting device proceeds to count wheels or axles. The signal continues to display stop until a count is made of wheels or axles passing out of the exit end of the circuit, and an automatic check is made that the number counted out is the same as the number counted in. Details of such systems, and a list of requisites to insure safe train operation with them, are given in the June Railway Signaling & Communications.

It is the sincere hope of the author that this material has shown the relationships which exist between railway mobile units and railway signaling, and that it emphasizes the desirability of cooperation of the various interested parties.

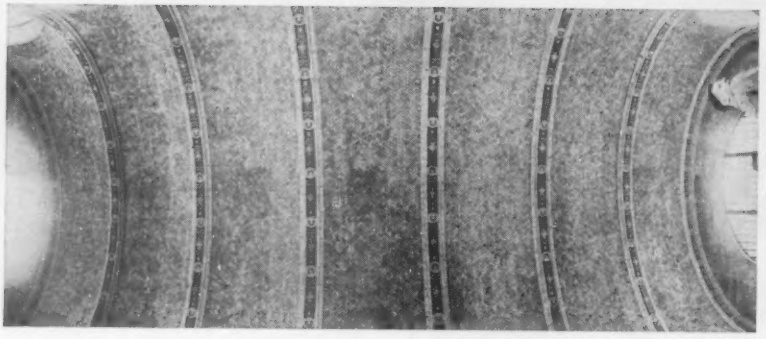
BEFORE



ORIGINAL PATTERN and colors of the barrel-arched ceiling were hidden by a coating of soot and grime. *Photo by Edward DeLuga, Chicago Daily News.*

WASHING of ceiling was done by workmen standing on timber platforms placed on top members of scaffolding. Dark, unwashed areas can be seen above scaffolding and in background.

AFTER



FULL BEAUTY of the cameo-like terra-cotta arches and tile ceiling is revealed. (In these two views the waiting-room ceiling is seen from end-to-end through the lens of a "Panon" wide-angle camera.) *Photo by Edward DeLuga, Chicago Daily News.*

Big Station Gets Spring Cleaning

Interior of North Western depot at Chicago looks a lot better now since a dingy coating of soot and grime was removed from the walls and high, arched ceiling, revealing unsuspected beauty

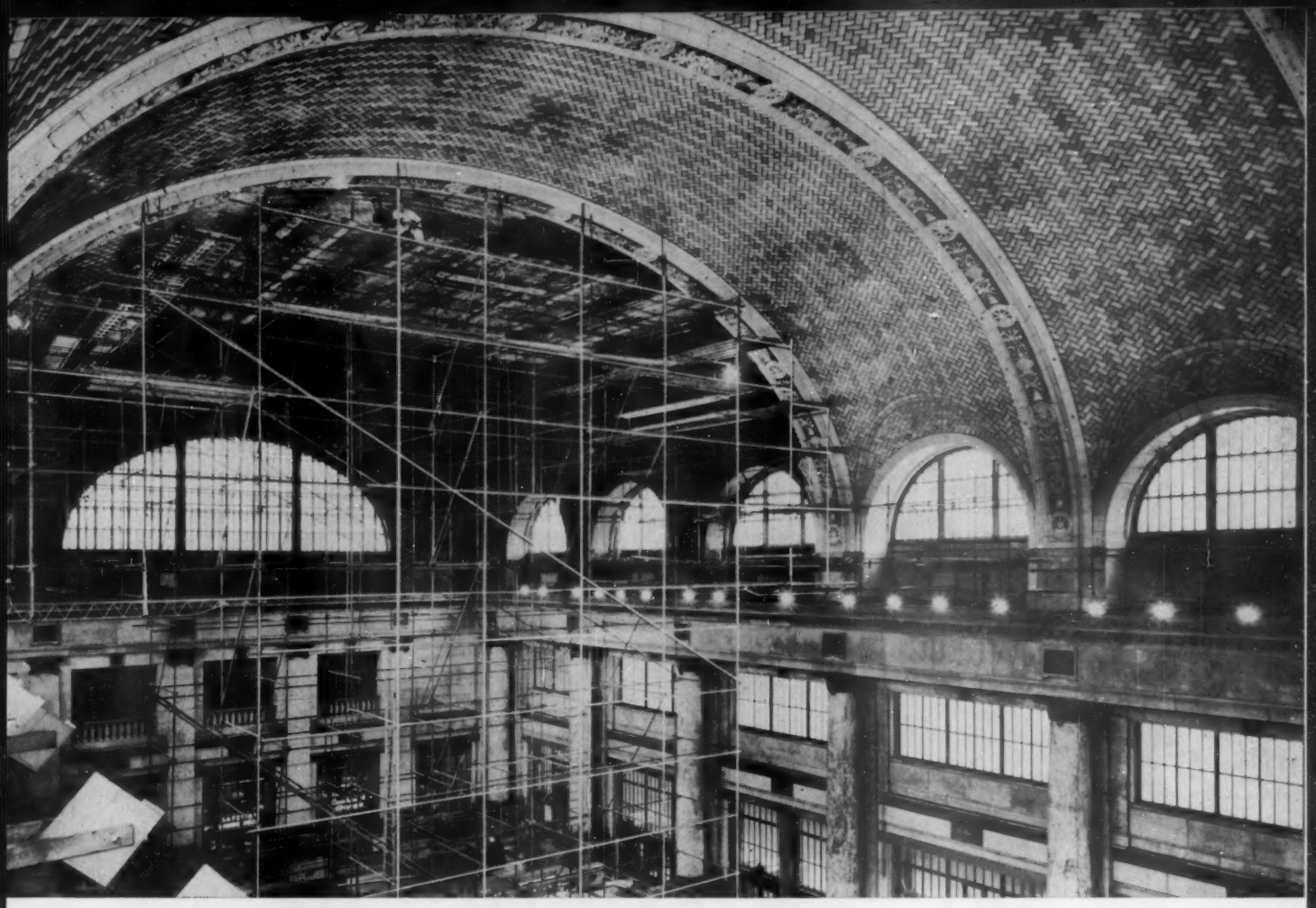
Ninety thousand patrons pass through the North Western's station in Chicago daily, and they like its freshly cleaned interior which brings forth a renewed elegance to the Madison street terminal.

It took a ton of cleaning compound, plus plenty of water and elbow grease, to remove 45 years of accumulated soot and grime from the walls and ceiling of the waiting room and concourse. And, just to make the job harder, the waiting-room ceiling, which arches 84 ft above the floor, had to be cleaned without interfering with traffic.

The necessity for the cleaning, which had often been considered and as often postponed, was emphasized by the recent completion of modern ticket offices and a baggage room in and adjacent to the waiting room. This work was carried out as part of a program of improvements, one phase of which was aimed at consolidating all passenger facilities on the waiting-room level to promote the convenience and comfort of the through and commuter passengers using the terminal daily. The contrast created by the old and new construction triggered the decision to proceed with the cleaning project so that the entire interior would be compatible.

The station interior reflects the Italian Renaissance style of the structure which was completed in 1911. It includes a cavernous waiting room, 200 by 100 ft, which has a barrel-vaulted ceiling extending 84 ft above floor level. The waiting room is flanked on the track side by a two-story concourse 316 by 60 ft.

Studies were made to determine the most economical method of cleaning the two rooms. The investigation included fixed portable scaf-



folding, movable or rolling scaffolding and, in the case of the waiting-room ceiling, suspended scaffolding as a means of reaching all portions of the walls and ceiling.

Two types of scaffolding were selected. A rolling type, mounted on casters, was chosen for cleaning the side walls of the waiting room, up to the cornice above the columns, and the side walls and flat ceiling of the concourse. For cleaning the arched ceiling, a portable fixed-type scaffold was selected which could be dismantled and moved ahead in sections and re-erected as the work progressed the length of the waiting room.

Two Scaffolding Contracts

Scaffolding was furnished on a rental basis under two contracts. The rolling scaffold was erected in the shape of a block "U", in plan, using standard patented Safway "A" frames with cross bracing. The scaffold was 46 ft high and was supported on twelve 6-in. casters equipped with brakes which locked both the wheel and swivel when the scaffold was in place. The "U"-shaped feature permitted the scaffolding to straddle columns which project into the waiting room from the wall, and a series of large floor-mounted brass cluster lights (since removed) which were centered in the wall panels between the columns.

The second contract covered the portable fixed-type scaffolding which provided a platform about 50 ft wide at the top from which the central part of the ceiling could be washed. Additional platforms were provided at the sides at five levels which followed the contour of the arch. The staging of these platforms consisted of plank laid across members of the scaffolding.

This scaffolding consisted of pipe sections erected in the form of two parallel towers placed transversely in the waiting room and spaced 18 ft apart. Prefabricated trusses, used to span the space between the tops of the two towers, provided support for the upper working level. Similar trusses extended between the ends of the towers and a ledge at the base of the ceiling arch.

The working levels along the contour of the arch were provided by erecting additional scaffolding supported by the prefabricated trusses that spanned the 18 ft between the ends of the towers and the side walls.

How Scaffold Was Moved

At the start of the work, the scaffolding was erected with one tower against the east end wall of the waiting room. While the wall above the top of the columns and the first 28 ft of ceiling were being washed, the scaffolding contractor erected another half section of tower adjacent to one end of the outer of the two towers. When the washing of the first 28 ft of ceiling had been completed, the tower and intermediate braces adjacent to the end wall were dismantled, one-half at a time. The first half to be dismantled was re-erected to join up with the half tower mentioned above. The re-

BIG STATION GETS SPRING CLEANING

mainder was erected as a new half tower ahead. Continuing this process, the scaffolding was progressively moved ahead as the work progressed from one end of the waiting room to the other.

Sidewalls and ceiling were washed with a solution of C&H No. 44 cleaning compound and water. The solution was applied by hand, using sponges and cloths. Water and chemicals for washing the side walls of the waiting room and the side walls and ceiling of the concourse were raised and lowered to the working level with hand lines, as were the chemicals for washing the waiting-room ceiling. Water for the waiting-room ceiling was pumped to a container which acted as a reservoir on the working level. Dirty solution, produced during the cleaning operation, was piped to a container on a hand truck on the waiting-room floor. Whenever this container was filled, it was wheeled to the track area and drained.

To protect patrons using the station during the washing operation, canvas drop cloths were attached to the first stage of horizontal tie rods of the scaffold towers, about 10 ft above the floor.

Janitor Forces Do Cleaning

Terminal janitor forces, under the direction of the terminal custodian, furnished four men for the washing operation. Three did the actual washing while the fourth served as attendant on the floor level. Washing and painting of the ceiling of the concourse and the window frames in the end walls of the depot was done by bridge and building forces. The entire ceiling area was inspected by the engineering department and found to be in excellent condition.

Completion of the wash job disclosed architectural decorations long hidden under a heavy coating of soot and grime. In the ceiling these decorations included eight white terra-cotta arches which were ornamented cameo-style with conventionalized patterns of railroad tools and equipment in white displayed against a dark-green recessed background. The area between these terra-cotta arches was covered with buff-colored tile laid in a basket-weave pattern. Restoration of the original color imparted a warmth long absent from the previously dark and dingy interior of the waiting room.

Railroading

After Hours

Air Line Fares

An operating vice-president of a pretty big railroad got after me the other day to write something about the interest the air lines' regulators are showing in reducing air line fares. It is contended that, since the air carriers are making 10 or 12 per cent on their investment, maybe the traveling public ought to be given a break in lower fares.

This railroader said that, since the air lines are so prosperous—what they ought to do, instead of reducing fares, is to pay more for the facilities (airports, weather service, research) they get from government for nominal charges, or no charges at all.

What this railroader said makes sound economic sense. It would be a fine thing for the public treasury if somebody would carry on a campaign to put the services the air lines get from government on a self-sustaining basis. But what bothers me is whether there aren't other aspects of the taxpayers' generosity to the railroads' competitors that are hurting the railroads a lot more than the taxpayers' contributions to the air lines.

by James G. Lyne

Editor, Railway Age

For example, what about the completely indefensible absence of toll charges on improved inland waterways? Here billions of public money have been spent—and the principal beneficiaries are a mere handful of the country's biggest and richest corporations.

Tolls for Barges

If you put a couple of mills per passenger-mile on the air lines' fares —by requiring them to pay for the facilities they now get for little or nothing—will the result be to shift a lot of traffic from the air lines to the rails? My guess would be that such action would be a big relief to the public treasury—and that it would be patriotic for me to advocate it. But how much help will such a course be in filling up the vacant seats on passenger trains?

On the other hand, if an additional 2 mills or so per ton-mile were put on barge operations—by requiring operators to pay compensatory tolls for the use of waterways—there might be much less temptation than there now is for a lot of traffic to seek barge movement.

I'm not in favor of subsidies for any business, including the air lines. From watching their operations rather closely, however, I suspect that a good deal of the reduction in rates they've attained in recent years has been attributable to their own ingenuity—certainly not *entirely* to government assistance. For one thing, they've been mighty resourceful in developing rates to encourage use of otherwise idle capacity.

If a schedule doesn't pay its way, they lose no time in pulling it off. They offer reduced rates for night riding, and so on. And look at this "deferred service" for freight they're now trying to develop. What they're after is to develop a reservoir of "fill-in" traffic, to keep any plane from having to move with less than a full load.

Millions of people enjoy television without understanding its installation and maintenance.

Perhaps you have been putting off the use of carrier because you consider it too complex, too difficult to understand, maintain, and operate. *A Lenkurt Carrier System* will soon change your mind. It is engineered to your requirements and comes to you factory-assembled, rack-mounted, and tested as a system. Installation is quick and easy, and in a matter of minutes it's "all set to go" . . . not as complicated to maintain as the television set in your home. And your worries about adequate circuits are over.

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GENERAL TELEPHONE SYSTEM

(Continued from page 31)

president at Chicago, and **J. A. Greer,** vice-president at San Francisco, have retired. **R. W. J. Harris** has been appointed vice-president at Chicago to succeed Mr. Chapman, and **K. W. Engstrom,** district sales agent at San Francisco. Effective June 1, **W. E. Gadd** returned to Rail Joint as vice-president, and **W. J. Acker** was appointed assistant to president. Messrs. Gadd and Acker will have headquarters in New York.

H. G. Ebdon, vice-president and general sales manager, **Combustion Engineering, Inc.,** has been named executive vice-president.

Matthew W. McMahon and **J. Alex Bader,** sales engineers with **Dresser Manufacturing Division,** have been appointed, respectively, eastern and western district managers, railroad sales.

Bart A. Rossfeld, assistant vice-president, National Bearing Division of **American Brake Shoe Company,** has been appointed vice-president, and **Albert L. Hunt,** manager industrial sales, has been named general manager of the division's St. Louis plant.

Joseph E. Van Kirk has been promoted to special sales representative for eastern railroads by the reflective products division of **Minnesota Mining & Manufacturing Co.**

George E. Lallou, secretary-treasurer of **Budd Company,** has been elected a vice-president.

Railway Officers

AKRON, CANTON & YOUNGSTOWN.—A. Russell Pound appointed general agent at New York, succeeding **Emil Tripp,** transferred to Baltimore to replace **S. E. Mullikin,** resigned to accept appointment in government service.

ATLANTIC COAST LINE.—H. L. Davis appointed assistant to general freight agent at Wilmington, N. C. **C. E. Vick** named general industrial agent at Wilmington and **J. L. Sparks** appointed general agent at Baltimore.

BANGOR & AROOSTOOK.—Palmer H. Swales, assistant to mechanical superintendent at Derby, Me., appointed division master mechanic at Oakfield, Me.

CHESAPEAKE & OHIO.—Elza Curtis, R. C. Stewart and **H. M. Wilson** named general agents, passenger department, at Columbus, Ohio; Chicago; and Grand Rapids, Mich., respectively. **Gibson Seward** and **W. P. Walker** appointed district passenger agents at Chicago and New York, respectively.

FLORIDA EAST COAST.—C. Davies Meitin, assistant general freight agent at St. Augustine, Fla., promoted to general freight agent, succeeding **G. V. Jones,** transferred. **L. P. Schmitt** promoted to assistant to freight traffic manager, succeeding **Jack R. Nauright,** who replaces Mr. Meitin.

FRISCO.—C. B. Michelson, general agricultural agent at St. Louis, has retired. **A. G. Anderson,** assistant general agricultural agent, succeeds Mr. Michelson, with headquarters at Springfield, Mo.

B. J. Lutzenberger appointed terminal trainmaster at Birmingham, Ala.

LEHIGH & NEW ENGLAND.—S. T. W. Green, vice-president and general manager, elected executive

S. T. W. Green

vice-president, and **H. C. Tunison,** chief engineer, elected also general manager both at Bethlehem, Pa.

E. C. Kaiser, superintendent motive power at Pen Argyl, Pa., appointed chief mechanical officer there. Positions of assistant general manager and superintendent of motive power, abolished.

NORFOLK & WESTERN.—The St. Louis office has been moved to 2059 Railway Exchange Building.

NORFOLK SOUTHERN. — Joseph L. McGhee promoted to assistant freight traffic manager—sales and service at Richmond, Va., succeeding **J. Milton Dillard,** whose appointment as general industrial agent at Norfolk was noted in Railway Age, Apr. 23, p. 44.

PIEDMONT & NORTHERN.—A. C. Duncan, trainmaster at Charlotte, N. C., transferred to Greenville, S. C., to succeed **F. M. Sellers,** who replaces Mr .Duncan at Charlotte.

J. Louis Rhodes, mechanic, promoted to master mechanic at Greenville, succeeding **Fred A. Noblett,** retired.

ROCK ISLAND — The following appointments were announced at Chicago: **J. E. Capps,** from freight traffic manager to assistant general freight traffic manager, rates and divisions; **F. L. Rettke,** from assistant freight traffic manager to freight traffic manager, rates and divisions; **E. W. Larsen,** from general freight agent to assistant freight traffic manager-rates; **John Hooks,** from assistant general freight agent to general freight agent-rates; and **A. C. Loetz,** from chief clerk to assistant general freight agent-rates.

J. D. Loftis, assistant general superintendent of motive power, appointed director of research and development, and **R. F. Newton,** electrical engineer, named electrical and mechanical engineer, both at Chicago. **J. E. Tiedt,** engineer of tests, has retired.

SANTA FE.—R. J. Ward, eastern freight traffic manager at New York, appointed freight traffic manager at Chicago, succeeding **R. M.**

R. J. Ward

F. M. Hemphill

Hitshew, who retired May 31. Mr. Ward's successor is **F. M. Hemphill,** general freight agent at Chicago, who in turn has been replaced by **G. J. Sirois,** assistant general freight agent at Amarillo, Tex.

SEABOARD. — W. V. McEwen appointed diesel supervisor (system)

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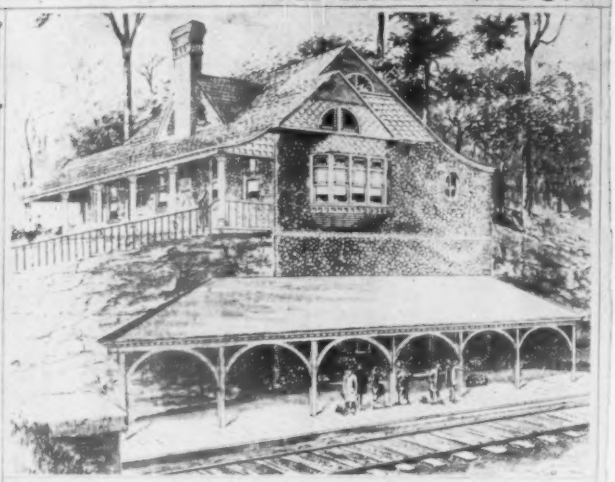
APRIL 29, 1887



NEW STATION UTILIZES ELECTRICAL DEVICES

NEW YORK, Apr. 29, 1887 The obvious criticism of the new Glen Ridge station is the placing of the agent at the end of the building farthest from the track, where he cannot have visual notice of approaching trains; done, evidently for the comfort and pleasure of waiting passengers, affording them an airy room, with a romantic prospect from the bay window overhanging the cut.

But with the simple and inexpensive electrical devices now so common this objection is largely obviated. Electrical annunciators are a great convenience at any station, and should be provided even where the agent has a good outlook; and where he does not have it they are doubly necessary.

The engraving of the station gives the correct idea of its outlines but black and white lines are hardly adequate

The romance of electricity and railroads started slowly—then grew in a rush. A single decade bridged the use of "simple and inexpensive" electrical devices to the introduction of major railroad power, lighting and control installations. And with each innovation Graybar was there—analyzing and helping to solve the electrical problems that are also railroad problems.

Sixty-five members of the Graybar sales staff *specialize* in railroad needs today. In communications, for instance, they'll be glad to work with you in the solution of any out-of-the-ordinary problem and furnish—without obligation—detailed installation recommendations, prices, specifications and such other data as you may require. And you can rely on the same experienced Graybar service in the fields of lighting, ventilation, power apparatus, control equipment and tools.

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GRAYBAR ELECTRIC COMPANY, 420 LEXINGTON AVENUE, NEW YORK 17, N. Y.
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UNION.—B. Ralph Gould, general manager at East Pittsburgh, Pa., elected also vice-president.

at Americus, Ga., replacing **E. F. Sanborn,** transferred to Richmond to succeed **L. Rosenblatt,** assigned to other duties.

WABASH.—Charles B. Willi, general freight agent at St. Louis, appointed assistant freight traffic manager (rates and divisions) there, to succeed **O. C. Bartels,** retired. Mr. Willi's successor is **George T. Barry,** assistant to freight traffic manager (rates and divisions), who in turn is replaced by **William A. Lingo. A. H. Bell,** assistant general freight agent at St. Louis, advanced to general freight agent at that point. **Lawrence R. Nowotny,** chief of tariff bureau, appointed assistant general freight agent at St. Louis and his former position abolished. **Robert E. Versen** appointed general agent, freight department at Minneapolis, to succeed the late **J. P. Mullen** (Railway Age, Apr. 16, p. 50).

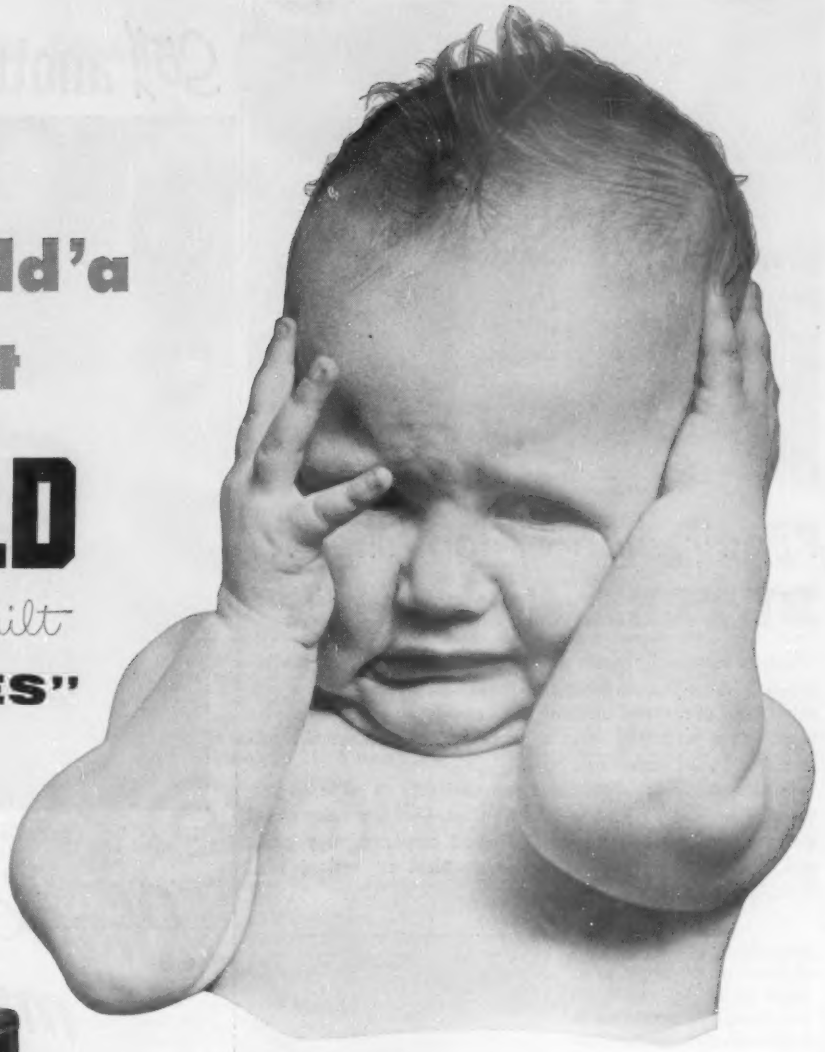
WESTERN MARYLAND.—Ira B. Chambers, assistant superintendent at Baltimore, named acting superintendent, Hagerstown division, succeeding the late **Edward E. Welsh. R. B. Wooters,** division engineer at Cumberland, appointed assistant superintendent at Baltimore. **Clarence N. Page,** assistant trainmaster and assistant road foreman of engines, named trainmaster at Baltimore. **S. W. George** succeeds Mr. Wooters as division engineer at Cumberland.

Edward W. Bardgett appointed eastern traffic manager at New York, succeeding Ivan C. Kuhns, retired. **O. Daniel Dreyer** and **John C. Francis** named district traffic managers at Detroit and Cincinnati, respectively.

OBITUARY

Patrick H. McCauley, 85, retired general superintendent of transportation of the **Northern Pacific,** died May 21 at St. Paul.

"They Should'a Bought GOULD Research-built BATTERIES"



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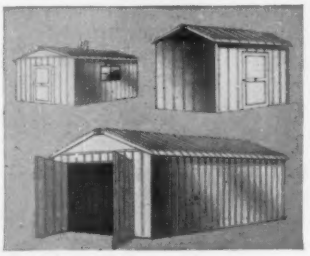

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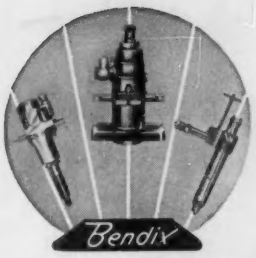

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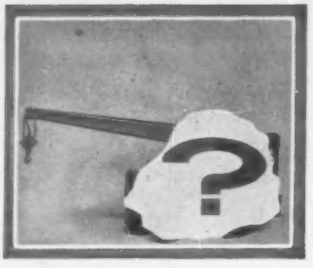

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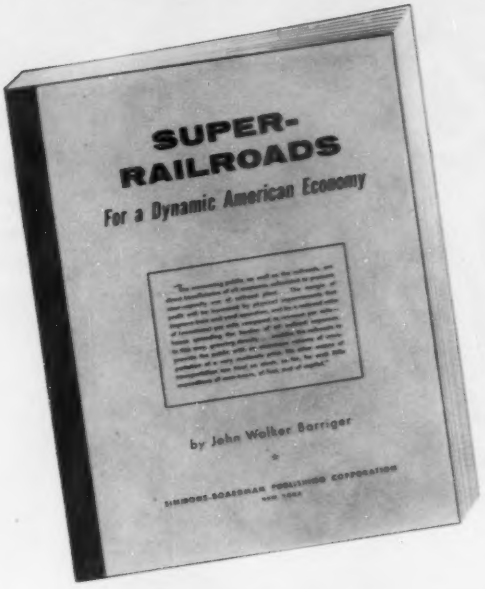

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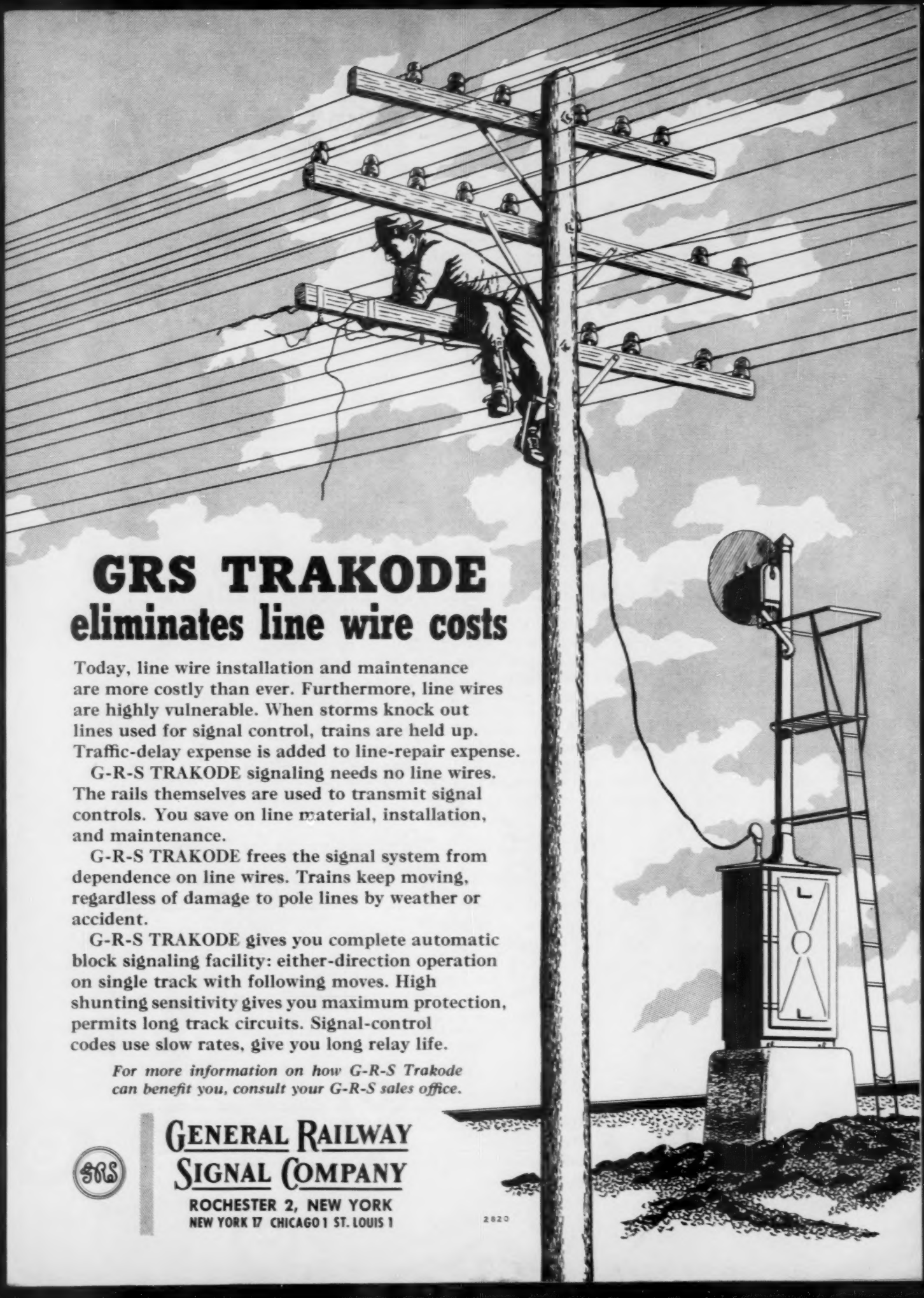

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